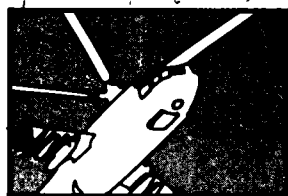
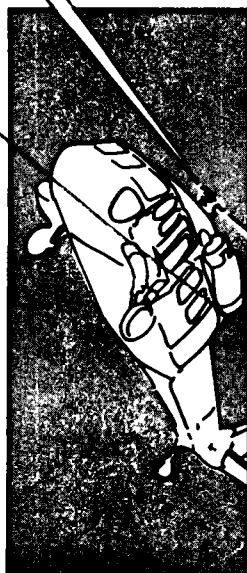
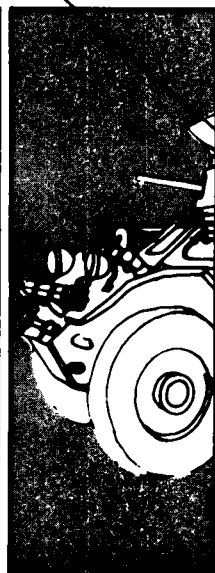


FM 1-88 copy 2 SIC by FM 1-402, August 1984
95 July 1980
JULY 1980
CORRECTED COPY

AVIATOR'S RECOGNITION MANUAL

filed with 100-21
Army Studies



FM 1-88 ●



This publication is an unclassified document. Hence, data presented such as vehicular and aircraft speeds, weapon system capabilities and ranges may vary from the actual classified data. Additionally, data will vary because of differing employment considerations. Appropriate documents should be consulted for detailed planning consideration.

RECOMMENDED CHANGES

Users of this publication are encouraged to submit recommended changes or comments to improve the publication. Comments should be keyed to the specific page, paragraph, or line of the text in which the change is recommended. Reasons will be provided for each comment to insure understanding and complete evaluation. Changes and comments should be prepared, using DA Form 2028 (Recommended Changes to Publications and Blank Forms), and forwarded direct to **COMMANDER, US ARMY AVIATION CENTER AND FORT RUCKER, ATTN: ATZQ-TD-TL-GP, Fort Rucker, Alabama 36362.**

**Field Manual
No. 1-88**

***FM1-88**

**HEADQUARTERS
DEPARTMENT OF THE ARMY**
Washington, DC, 7 July 1980

*SIS by Rm 1-402
Aug 1984*

**AVIATOR'S
RECOGNITION MANUAL**

***This manual supersedes TC 1-88, 29 March 1977.**



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The words "he," "him," "his," and "men," when used in this publication, represent both the masculine and feminine genders unless specifically stated.

INTRODUCTION

PURPOSE

The aviator and aerial observer have a need for a ready reference of combat equipment likely to be encountered during combat operations. The primary purpose of this manual is—

- To familiarize the aviator and aerial observer with modern combat equipment.
- To serve as a pocket reference for the aviator and aerial observer for field use.
- To serve as a guide for commanders in conducting unit training in equipment recognition.

SCOPE

This manual provides information on current operational combat vehicles, guns, and aircraft of the United States, Allied Western Powers, and foreign countries which reasonably can be expected to be observed from the air during hostilities.

Because some equipment is classified, this manual is not all-inclusive. It should be emphasized that the depicted data is based on the best information available. Sufficient equipment is illustrated to familiarize the user with the most common weapon systems currently being fielded by the United States, Allied Western Powers, and the Warsaw Pact countries. Consider that publications of this nature will have a built-in time lag and that some equipment may be experimental or classified at the time of writing that may be fielded or unclassified at publication time. It is your responsibility to verify the latest information available—especially on threat equipment.

THREAT

Long-range air defense weapon and missile systems dominate the air above the battlefield. They can deny forward fighting elements effective close air support and force helicopters to operate out-of-range or below line-of-sight of acquisition radar, or to use terrain flying techniques. Their capabilities are such that virtually anything that can be seen can be hit and killed. Aviation operations against an enemy equipped with sophisticated air defense and electronic weapons will be significantly affected by the following, singly or in combination, and must be considered in mission planning and execution:

- Air-to-air missiles
- Surface-to-air missiles
- Concentrations of small arms fire
- Monitoring of communications
- Helicopter attacks on helicopters
- High performance aircraft attacks on helicopters
- Jamming of command and control frequencies
- Jamming of air traffic management systems

Due to this high threat environment, every effort must be made to correctly recognize, identify, and differentiate between friendly and hostile equipment. The aviator, by aerial reconnaissance, plays a vital role in the overall plan of the combat commander by informing him of who, what, where, and the number of opposing forces confronting him.

GENERAL TRAINING NOTES

The items of equipment portrayed in this manual are grouped together by type: rotary wing aircraft, fixed wing aircraft, antiaircraft guns and surface-to-air-missiles, armor, artillery, light armored vehicles, and miscellaneous vehicles. The groupings are tabbed on the left margin and further subdivided by user countries. Those pages containing Warsaw Pact and potential threat equipment are shaded entirely in brown for easy reference. The user country and pertinent data are given below the photographs. As you read and study the illustrations, select unique identifying features of each in order to provide instant battlefield recognition. Many items (showing user as various countries) may be employed by friendly, hostile, and uncommitted nations. Bear in mind that identifying and engaging a target will not likely be on a simple one-to-one confrontation. A tank or an antiaircraft weapon like the ZSU-23-4 will likely be used in multiple units or in conjunction with other supportive units which will be trying to acquire you as a target while you are occupied with your target acquisition. In some cases, areas most lucrative for mobility or firepower kills are depicted on certain types of combat equipment with a dot. However, you should remember that the frontal arc of the hull and turrets of armored vehicles are the most difficult to penetrate and dangerous to face. Because of this, engages from the *flanks*, *rear*, and *top* offer better kill probabilities.

The gaming device (Tactical Vehicle Identification) depicted on page 321 can be used as an invaluable instructional tool for increasing knowledge of combat equipment and for proficiency testing. This training device may be effectively used in class instruction or for self-testing.

METRIC VALUES ARE GIVEN THROUGHOUT THIS MANUAL AND A CONVERSION SCALE FOR COMMON MEASUREMENTS APPEARS ON PAGE 320.

PERFORMANCE STANDARDS - LEVELS OF SKILL

Accurate visual recognition of combat equipment is essential to aircrews, aviators, and observers in making an engagement decision. It is vital that recognition be swift and accurate. The specific level of skill required by an individual is determined by the individual's duty position, his potential for exposure to the Threat, and the degree to which he must distinguish enemy equipment from friendly equipment during combat operations

LEVEL 1. The individual will recognize, with at least 90 percent accuracy, all the known hostile equipment constituting the Threat and the friendly equipment expected to be operating in his area. The number of pieces of combat equipment that must be recognized at level 1 may vary from area to area, but probably should not exceed 15 total. Selection of these units for recognition training should be based on intelligence estimates of the local Threat and the inventory of friendly equipment expected to be providing support to a unit's combat operations. Level 1 is necessary for commanders and staffs in planning, conducting, and evaluating training and tactical exercises.

LEVEL 2. The individual will be expert at recognizing all friendly and potentially hostile combat equipment expected to be in a specified zone. The number of units to be learned cannot be precisely specified, but will probably range between 20 and 30, depending upon the theater of operations. The selection of combat equipment for training should be based on intelligence estimates of the potential Threat and the inventory of friendly equipment in the combat area. Personnel who should achieve this level of skill are pilots, observers, and aircrew. These individuals should approach 100 percent accuracy with 90 percent accuracy being a minimum acceptable level of proficiency. Individuals charged with the conduct of recognition training should also achieve level 2.

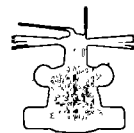
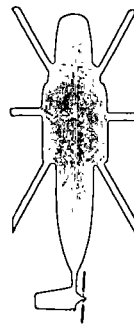
ROTARY WING AIRCRAFT

Note: Airspeeds are maximum. Ranges vary with mission configuration.

SEA STALLION	6
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SEA STALLION (CH-53) - Assault Transport



ARMAMENT: Varied

SPEED: 314 km/hr

RANGE: 477 km

USERS: Austria, Israel, United States, West Germany

HELICOPTER



KIOWA (OH-58) - Light Observation, Recon



ARMAMENT: Varied

SPEED: 222 km/hr

RANGE: 416 km

USERS: Australia, Austria, Brazil, Canada, Chile, Greece, Iran, Italy, Sweden, Turkey, United States



COBRA (AH-1G/AH-1Q*/AH-1S*) - Attack



ARMAMENT: Multi-weapon systems

SPEED: 352 km/hr

RANGE: 410 km

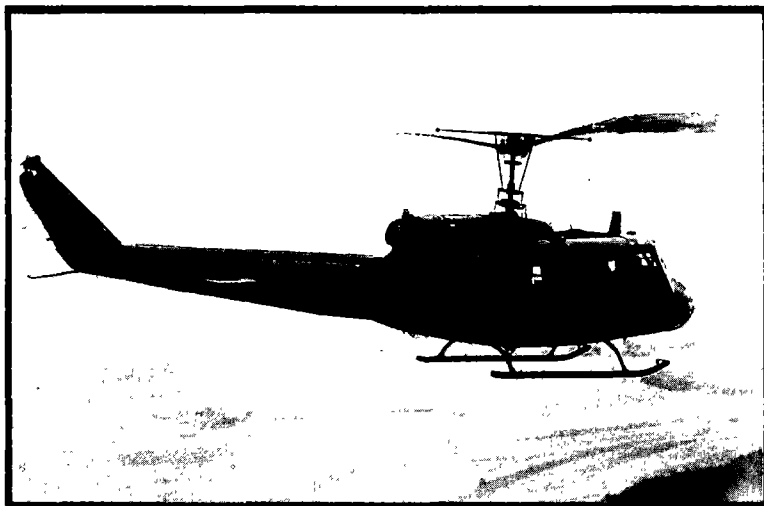
USERS: Iran (J Model), South Korea, Spain, United States



*The AH-1Q and AH-1S (Cobra TOW) mount the Tow antitank missile system. Configuration of the AH-1Q/AH-1S and AH-1G is similar, varying in the nose section somewhat.

HELICOPTER

IROQUOIS (UH-1D/H) - General-Purpose



ARMAMENT Varied

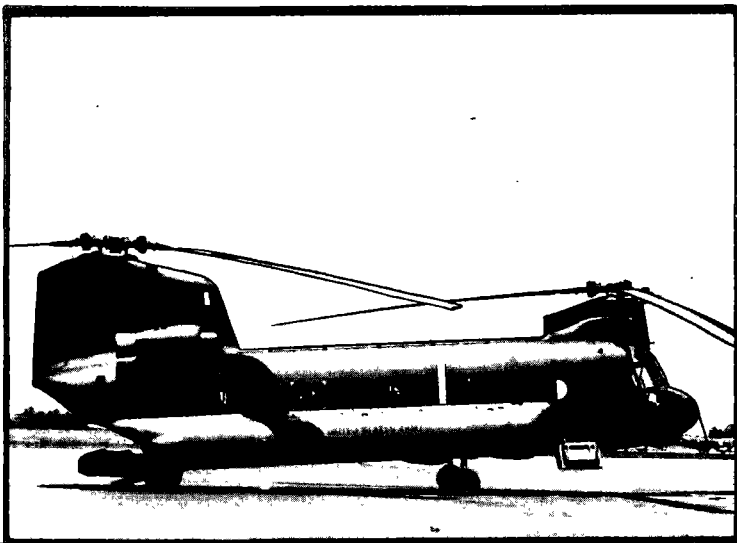
SPEED: 222 km/hr

RANGE: 340 km

USERS: Argentina, Australia, Brazil, Canada, Greece, Iran, Israel, Italy, Republic of China, Saudi Arabia, South Korea, Spain, Thailand, Turkey, United States, Zambia



CHINOOK (CH-47) -Medium Transport



ARMAMENT: Varied

SPEED 304 km/hr

RANGE: 531 km

USERS: Australia, Iran, Italy, Spain, United States

HELICOPTER



CAYUSE (OH-6) - Light Observation



ARMAMENT: Varied

SPEED: 240 km/hr

RANGE: 611 km

USERS: Argentina, Bolivia, Brazil, Denmark, Italy, Japan, Republic of China, Spain, United States, South Korea (South Korea uses OH-6C (TOW).)



TARHE (CH-54) - Heavy Cargo Transport



ARMAMENT: None

SPEED: 194 km/hr

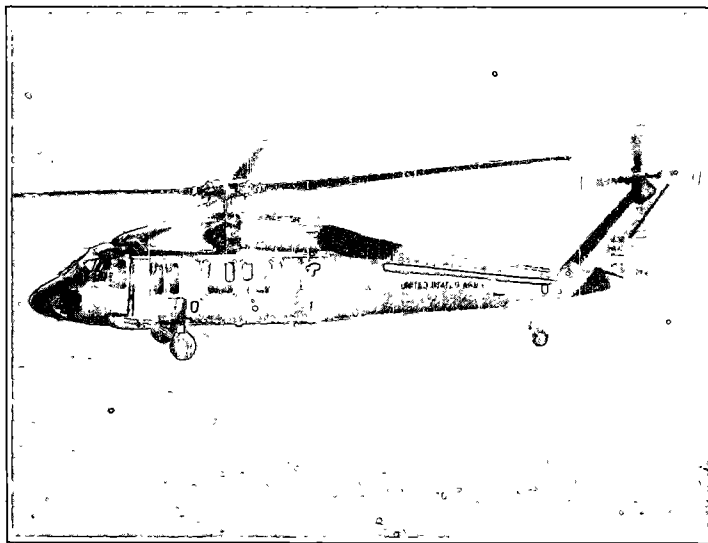
RANGE: 305 km

USERS: United States, West Germany

HELICOPTER



BLACK HAWK (UH-60) - General-Purpose

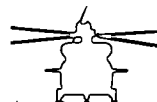


ARMAMENT: Varied

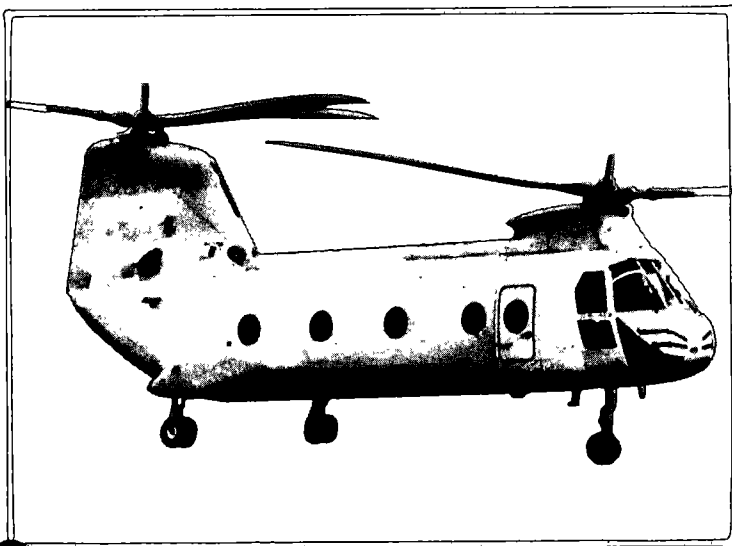
SPEED: 263 km/hr

RANGE: 578 km

USERS: United States



SEA KNIGHT (CH-46) - Cargo



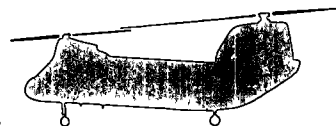
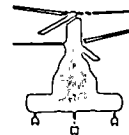
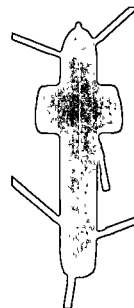
ARMAMENT: None

SPEED: 257 km/hr

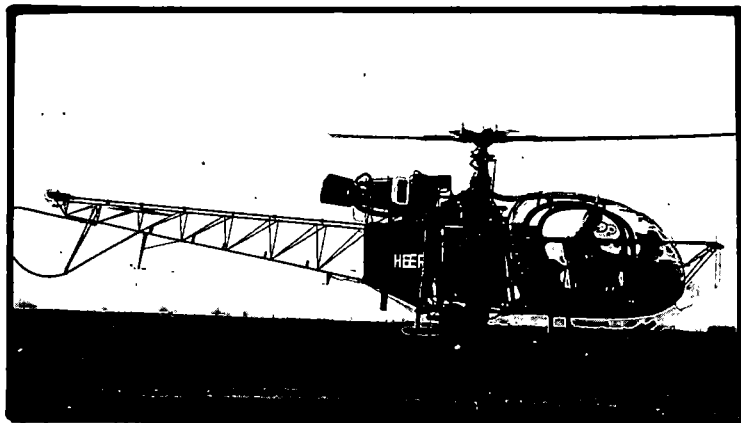
RANGE: 426 km

USERS: Burma, Canada, Japan, Sweden, Thailand, United States

HELICOPTER



ALOUETTE - SE 3130 - Liaison, Observation



RECOGNITION FEATURES: Three-bladed main rotor; all-glass cockpit; latticed steel-pipe main and rear fuselage; skid gear.

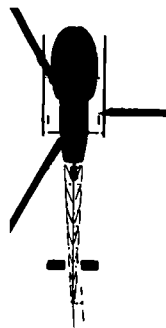
ARMAMENT: None

SPEED: 140 km/hr

RANGE: 350 km

USERS: Belgium, France, West Germany

EMPLOYMENT: Liaison, observation and reconnaissance helicopter



GAZELLE - Lightweight, Multi-Purpose



HELICOPTER

RECOGNITION FEATURES: Three-bladed rotor mounted on top one-third of distance from front of cabin; turboshaft engine mounted on top rear of cabin; prominent exhaust stack protrudes from engine to rear; teardrop-shaped body to tail boom; round transparent plastic nose; shrouded tail rotor inclosed in vertical fin.

ARMAMENT: Varied

GUN RANGE: Varied

SPEED: 310 km/hr

RANGE: 785 km

USERS: France, United Kingdom, Yugoslavia

EMPLOYMENT: Multi-purpose military. Gazelle also has antitank capacity, using 4 or 6 hot missiles.

PUMA



HELICOPTER

RECOGNITION FEATURES: Large four-bladed rotor mounted above center of passenger/cargo compartment; two turbine engines on top of body midsection give humpback appearance; long rectangular body with stepped, glassed-in cockpit and tapered rear section; undercarriage retracts; thick backswept tail fin opposite tail rotor.

ARMAMENT: Varied - machineguns, cannon, or missiles

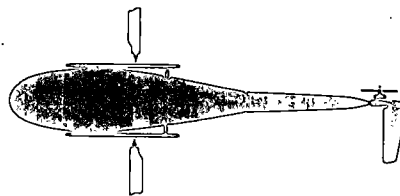
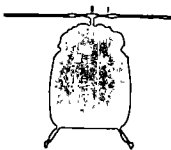
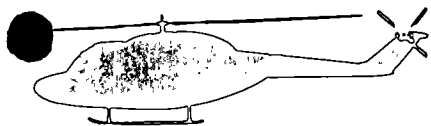
SPEED: 277 km/hr

RANGE: 629 km

USERS: Abu Dhabi, Algeria, France, Indonesia, Ivory Coast, Malagasy Republic, Mexico, Portugal, South Africa, United Kingdom, Zaire

EMPLOYMENT: Medium transport and assault helicopter

LYNX - WG-13 Multi-Purpose



HELICOPTER

RECOGNITION FEATURES: Four-bladed rotor on hump, stepped up atop cabin; two turboshaft engines mounted on top rear of cabin; semi-elliptical air intake on either side of rotor-gear housing; twin, circular exhaust ports pointing out and up.

ARMAMENT: Varied

GUN RANGE: Varied

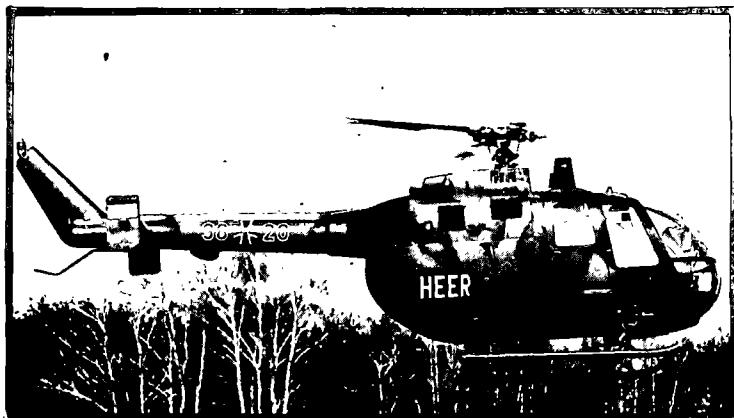
SPEED: 333 km/hr

RANGE: 786 km

USERS: Argentina, France, United Kingdom, Netherlands, Egypt

EMPLOYMENT: Multi-purpose military

BO 105 M - Liaison, Observation



RECOGNITION FEATURES: Four-bladed main rotor; horizontal tail stabilizer; conventional pod and boom type fuselage; skid gear.

ARMAMENT: None

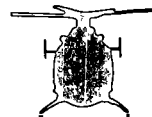
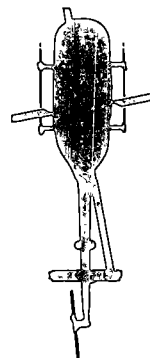
SPEED: 200 km/hr

RANGE: 400 km

USERS: Netherlands, West Germany

EMPLOYMENT: Liaison, observation and reconnaissance helicopter

HELICOPTER



BO 105 P - Attack



RECOGNITION FEATURES: Four-bladed main rotor; horizontal tail stabilizer; conventional pod and boom type fuselage; skid gear.

ARMAMENT: Six antitank missiles HOT

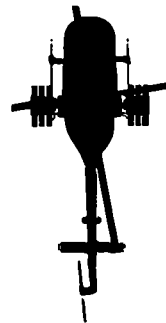
WEAPON RANGE: 4,000 meters

SPEED: 200 km/hr

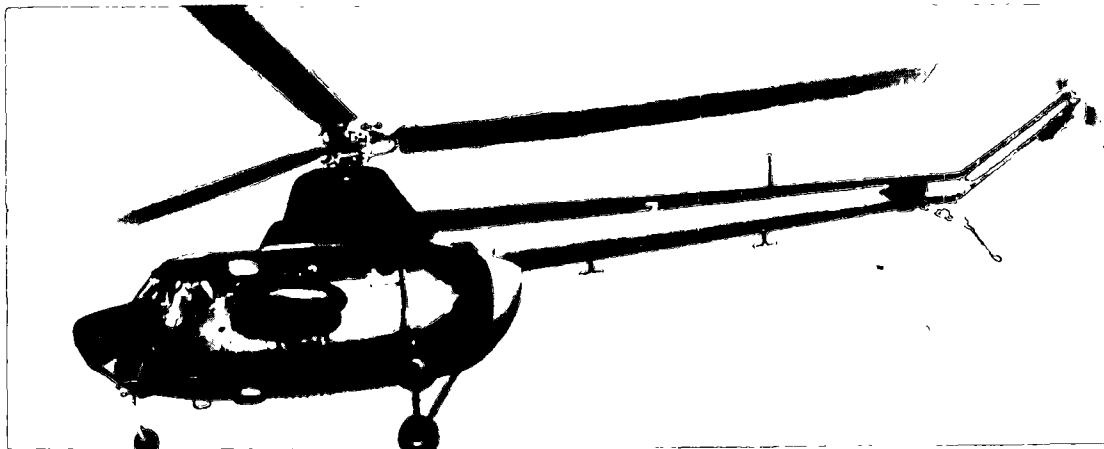
RANGE: 260 km (PAH standard profile)

USERS: West Germany

EMPLOYMENT: Antitank helicopter



HARE (Mi-1) - Light Observation



RECOGNITION FEATURES: Single rotor; tricycle gear; and single radial engine. Small fuselage suspended beneath tail rotor system pylon and long tailboom.

ARMAMENT: 1 x 12.7mm machinegun
1 x 16-shot 57mm rocket pod or 2xATGMs

GUN RANGE: 12.7mm machinegun - 1,500 meters
57mm rockets - 1,500 meters
ATGM - 3,500 meters

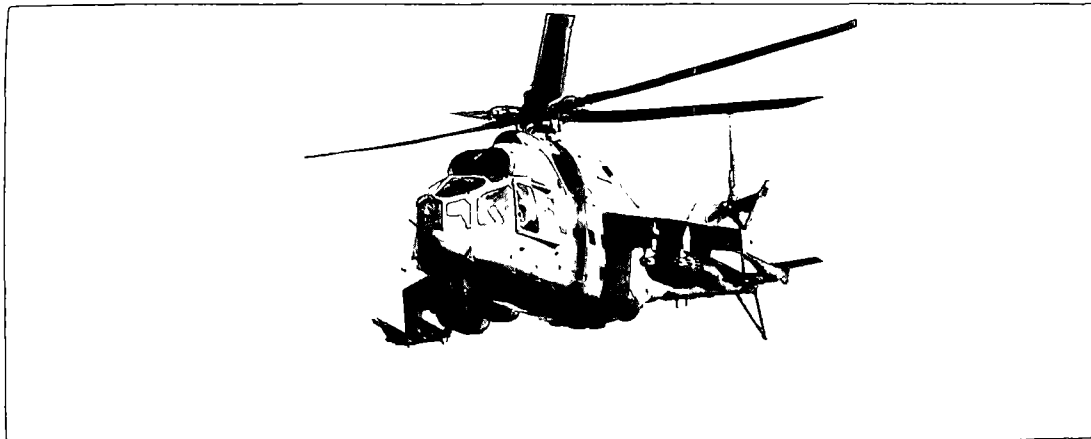
SPEED: 210 km/hr

RANGE: 389 km (maximum with auxiliary fuel)

USERS: Albania, Bulgaria, Cuba, Czechoslovakia, East Germany, Egypt, Hungary, Iraq, North Korea, People's Republic of China, Poland, Syria

EMPLOYMENT: General support of military with primary applications being liaison, reconnaissance, and scouting

HIND-A (Mi-24) - Assault Helicopter/Gunship



RECOGNITION FEATURES: Large glazed cabin window area; short, stubby weapons-carrying wings, mounted at mid-fuselage; tricycle retractable landing gear; five-bladed main rotor.

ARMAMENT: 1 x 12.7mm machinegun
4 x 32-shot 57mm rocket pods
4 x AT missiles

MAIN GUN RANGE: 1,500 meters

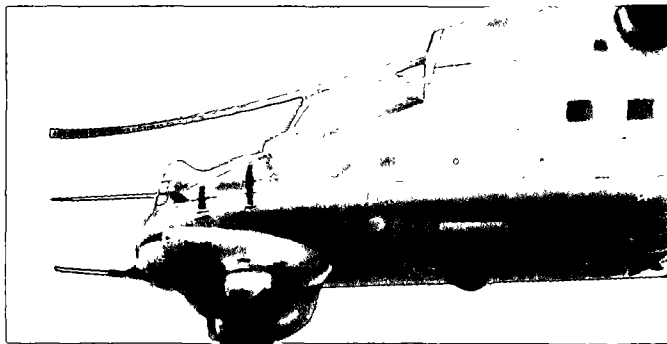
SPEED: 315 km/hr

RANGE: 455 km

USERS: USSR

EMPLOYMENT: Used in support of military units as a combat assault, also scout and/or armed gunship. Can also be used in close air support, anti-armor and anti-helicopter operations. May be found in the independent attack helicopter regiment of a Frontal Tactical Air Army.

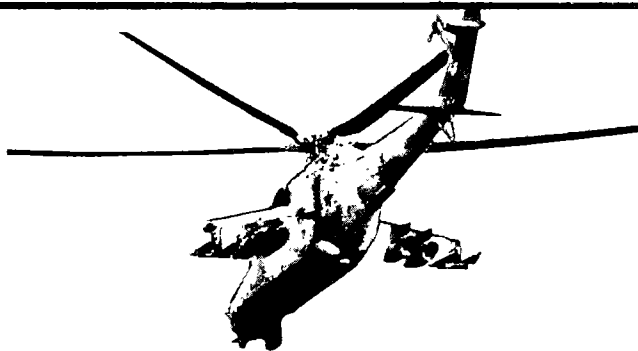
HIND-D - Assault Helicopter/Gunship



The distinguishing feature of the **HIND-D** is the nose modification which incorporates two tandem bubble canopies and a chin-mounted gun turret.

The **HIND-D** maintains the same troop-carrying and external weapons stores capability as the **HIND-A**. Each pylon has two 32-shot rocket pods and two launch rails for antitank guided missiles.





The **HIND** is a multi-purpose helicopter capable of carrying eight fully equipped combat troops in addition to a complete external armament load. It is larger than the UH-1 or the AAH. In addition to the standard pylon armament found on the **HIND-A**, the **HIND-D**, as seen in these photographs, incorporates a turret which houses a four-barrel "Vulcan" type 12.7mm gun. This turret can also accommodate a 23mm cannon. The sensor pack under the nose of the **HIND-D** probably carries a forward-looking infrared scanner slaved to the gun and a low-light-level TV.

HOPLITE (Mi-2) - Light Utility



RECOGNITION FEATURES: Single rotor; tricycle gear; twin turbine engines.

ARMAMENT: 4 x 12.7mm machineguns
2 x 16-shot 57mm rocket pods or
4 x ATGMs

MAIN GUN RANGE: 12.7mm machinegun - 1,500 meters
57mm rocket - 1,500 meters
ATGM (SAGGER) - 3,000 meters

SPEED: 209 km/hr

RANGE: 306 to 590 km

USERS: Indonesia, Poland, USSR, East Germany

EMPLOYMENT: General support of military units with primary applications of armed reconnaissance, liaison, and armed support

HOUND (Mi-4) - General-Purpose



RECOGNITION FEATURES: Single rotor; quadcycle gear; one 18-cylinder radial engine; clamshell rear doors; gun gondola under the forward portion of the fuselage.

ARMAMENT: 1 x 12.7mm machinegun
4 x 16-shot 57mm rocket pods or
4 x ATGMs

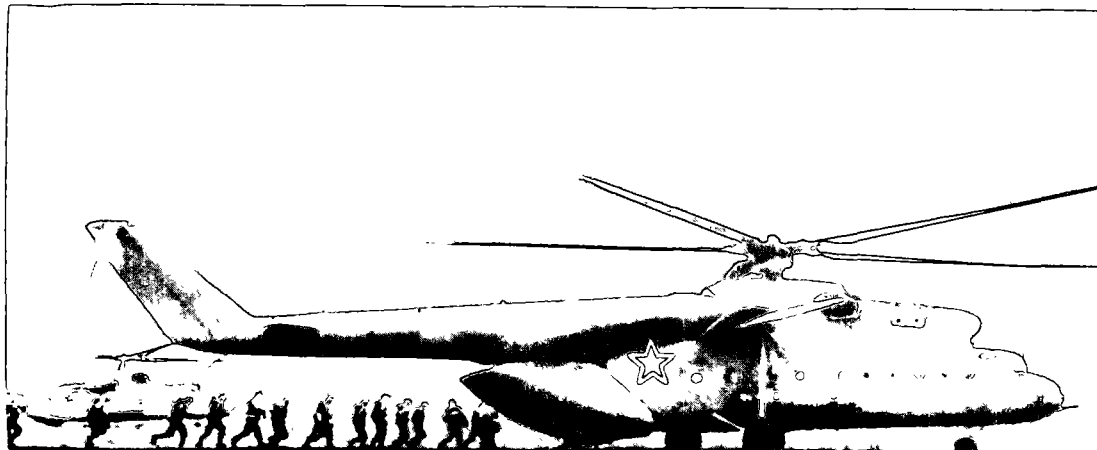
MAIN GUN RANGE: 12.7mm machinegun - 1,500 meters
57mm rockets - 1,500 meters
ATGM - 3,000 meters

SPEED: 213 km/hr

RANGE: 274 to 463 km

USERS: Albania, Algeria, Bulgaria, Cuba, Czechoslovakia, East Germany, Egypt, Finland, Hungary, India, Indonesia, Iran, Iraq, North Korea, People's Republic of China, Poland, Romania, Syria, Yugoslavia

HOOK (Mi-6) - Heavy-Lift



RECOGNITION FEATURES: Single rotor; twin turbine engines; stubby wings; tricycle gear; large rear clamshell doors.

ARMAMENT: 1 x 12.7mm machinegun

GUN RANGE: 1,500 meters

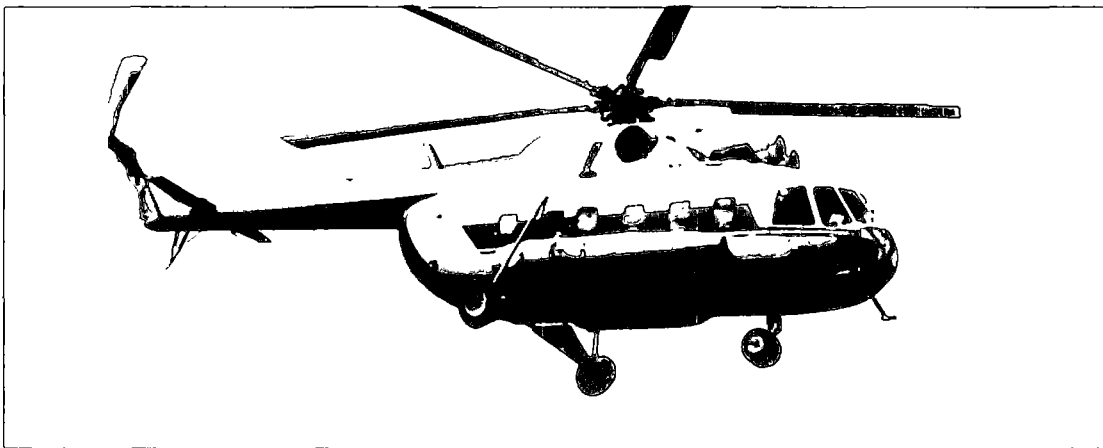
SPEED: 300 km/hr

RANGE: 204 to 612 km

USERS: Bulgaria, Egypt, Indonesia, North Korea, USSR

EMPLOYMENT: General support of military units with primary applications of troop (65) and cargo (heavy lift) transport

HIP (Mi-8) - Medium Utility



RECOGNITION FEATURES: Single rotor; twin turbine engines; tricycle gear; rear clamshell doors.

ARMAMENT: 4 or 5 x 7.62mm assault rifles
1 x 7.62mm machinegun
4 x 16-shot launchers for 57mm rockets
4 x 550-lb (250 kg) bombs
2 x 1,100-lb (500 kg) bombs

MAIN GUN RANGE: 7.62mm machinegun - 1,000 meters
57mm rockets - 1,500 meters

SPEED: 250 km/hr

RANGE: 163 to 480 km

USERS: Czechoslovakia, East Germany, Egypt, Finland, Hungary, India, Iraq, Peru, Poland, Sudan, Syria, USSR

EMPLOYMENT: General support of military units with primary applications on troop assault, armed support, electronic warfare platform, and general cargo transport

HOODLUM (Ka-26)- Light Cargo/Passenger/Ambulance



RECOGNITION FEATURES: Coaxial rotor system; twin radial engines; horizontal stabilizer with vertical fins; detachable pod.

ARMAMENT: None

SPEED: 167 km/hr

RANGE: 440 to 691 km

USERS: Bulgaria, East Germany, Hungary, Romania, Sweden

EMPLOYMENT: Detachable pod for medical evacuation or passengers

HARKE (Mi-10) - Heavy-Lift Crane



RECOGNITION FEATURES: Single-rotor, twin-turbine engines; cargo troop cabin; quadcycle landing gear (Mi-10, extended landing gear; Mi-10K, short gear with gondola under the cockpit).

ARMAMENT: None

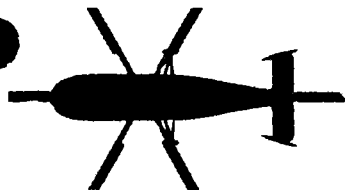
SPEED: 200 km/hr

RANGE: 250 to 450 km

USERS: USSR

EMPLOYMENT: Primary application of external heavy-lift, platform-mounted equipment, plus a 28-troop capacity

HORMONE (Ka-25)



HELICOPTER



RECOGNITION FEATURES: Only operational Soviet helicopter with twin coaxial rotors. External rack for stores and internal weapons bay; radome shapes vary. Accommodates up to 12 personnel. Short box-like body with glassed-in cockpit; usually chin-mounted radome in nose section.

ARMAMENT: Two torpedos or bombs and mines

SPEED: 170 km/hr

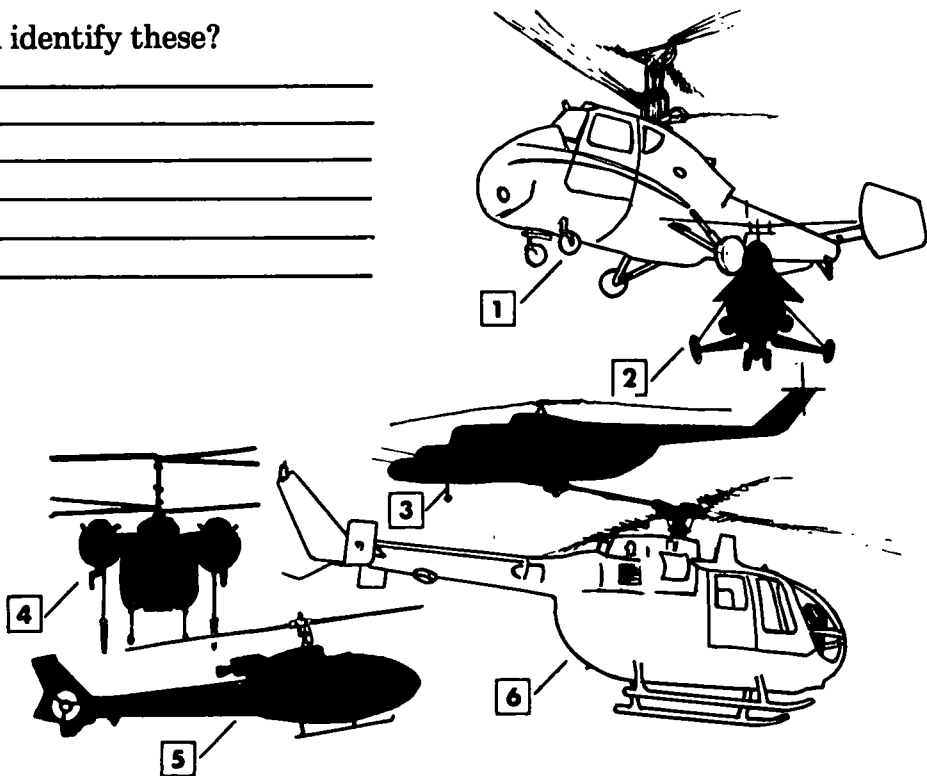
RANGE: 500 km

USERS: USSR

EMPLOYMENT: Ship-board anti-submarine and strike helicopter for Soviet Navy. Also used in transport and utility roles.

Can you identify these?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____



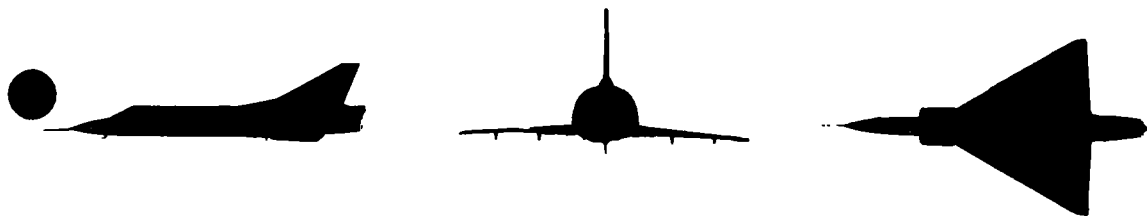
FIXED WING AIRCRAFT

Note: Airspeeds are predicated on level flight at altitude. Ranges vary with mission configuration.

MIRAGE III -----	46
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MIRAGE III



FIXED WING

RECOGNITION FEATURES: Low-mounted, delta wings with square tips; single engine; tubular body with needle nose and angular cockpit mounted forward on nose section

ARMAMENT: Air-to-air missile combinations

GUN RANGE: 800 meters (approximately)

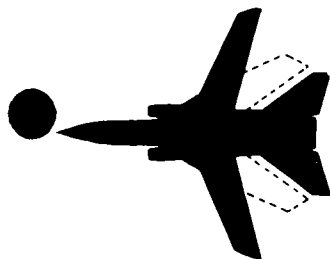
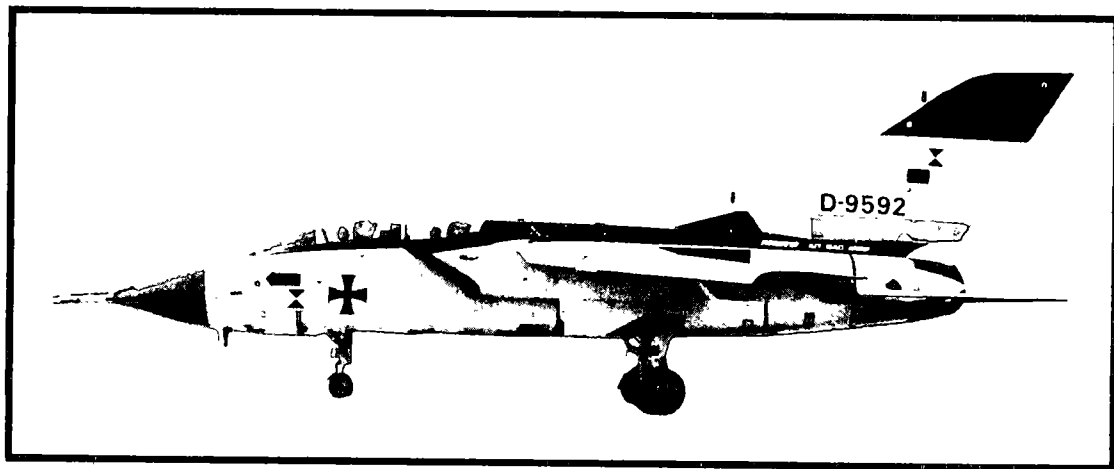
SPEED: 2,350 km/hr

RANGE: 2,408 km

USERS: Australia, Belgium, Brazil, Egypt, France, Israel, Lebanon, Libya, Malaysia, Pakistan, Peru, South Africa, Spain, Switzerland

EMPLOYMENT: Attack/interceptor/reconnaissance/close air support

TORNADO



FIXED WING

RECOGNITION FEATURES: High-mounted, variable-geometry wings with squared tips; twin turbofan engines mounted in fuselage; long, slender fuselage with pointed, solid nose; swept and tapered vertical stabilizer; a swept horizontal stabilizer with squared tips.

ARMAMENT: 2 x 27mm cannon
Wide range of conventional weapons

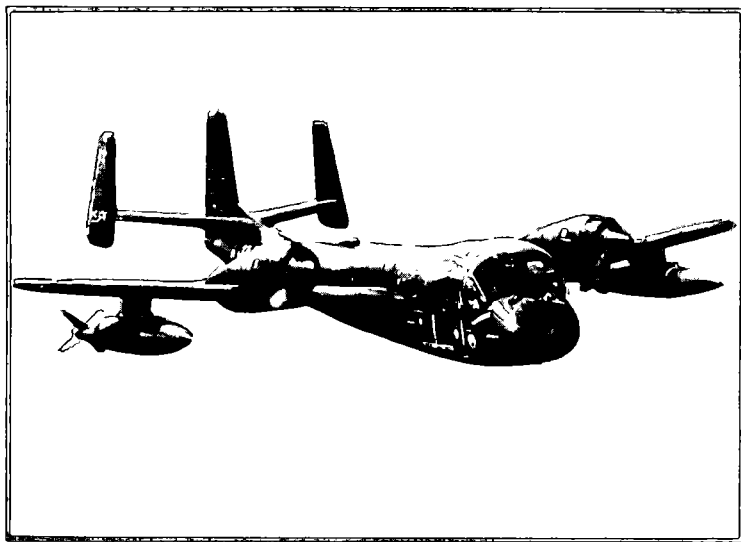
SPEED: 1,480 km/hr (low altitude)

RANGE: 1,390 km (radius with heavy load)

USERS: England, Italy, West Germany

EMPLOYMENT: Multi-role fighter, naval strike; reconnaissance, air superiority, close air support/battlefield interdiction. May also be seen as air defense variant and trainer.

OV-1 (Mohawk)



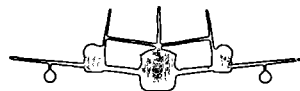
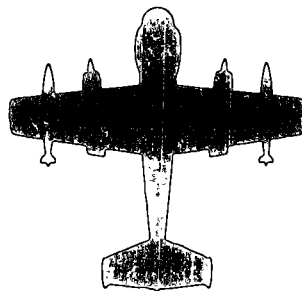
ARMAMENT: Varied

SPEED: 685 km/hr

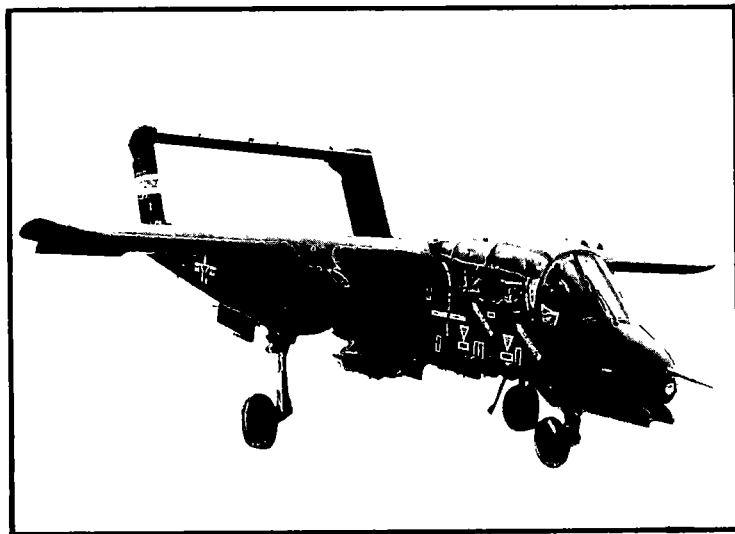
RANGE: 2,368 km

USERS: United States

FIXED WING



OV-10 (Bronco)

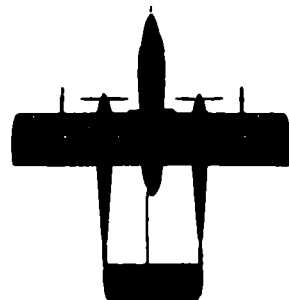


ARMAMENT: Varied

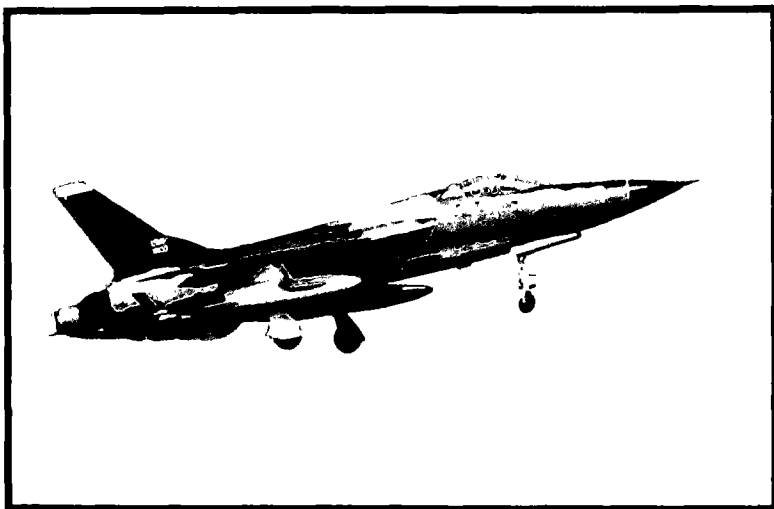
SPEED: 525 km/hr

RANGE: 2,220 km

USERS: United States, West Germany



F-105 (Thunderchief)



ARMAMENT: Varied

SPEED: 2,590 km/hr

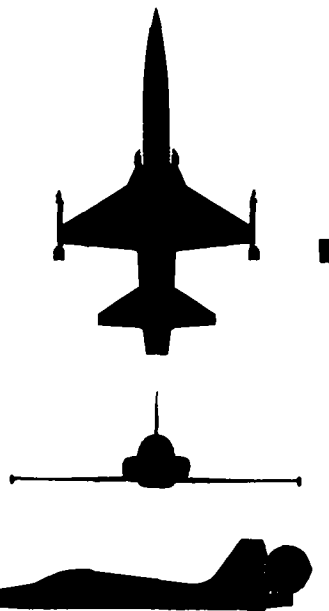
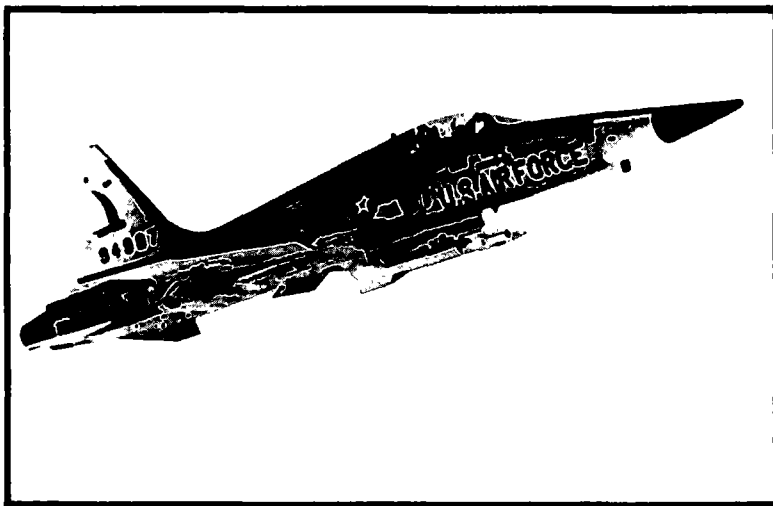
RANGE: 2,775 km

USERS: United States

FIXED WING



F-5 (Freedom Fighter)



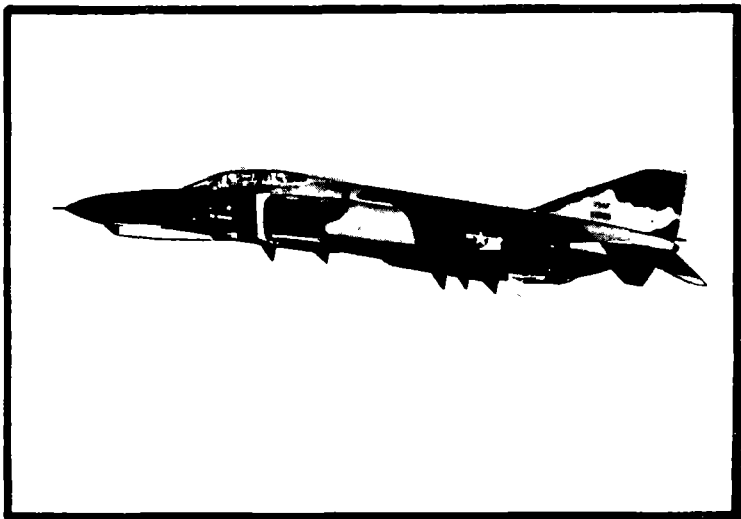
ARMAMENT: Varied

SPEED: 1,850 + km/hr

RANGE: 1,665 km

USERS: Canada, Greece, Iran, Jordan, Libya, Netherlands, Norway, Republic of China, Saudi Arabia, South Korea, Thailand, Turkey, United States, Venezuela

F-4 (Phantom II)



ARMAMENT: Varied

SPEED: 2,960 + km/hr

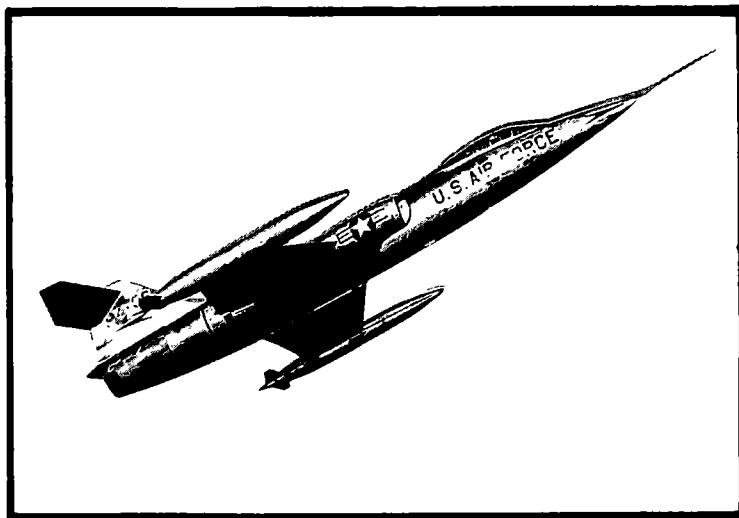
RANGE: 2,778 km

USERS: Greece, Iran, Israel, Japan, South Korea, Spain, Turkey, United Kingdom, United States, West Germany



FIXED WING

F-104 (Starfighter)



ARMAMENT: Varied

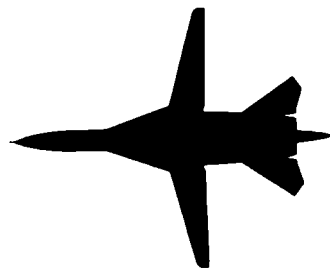
SPEED: 2,590 km/hr

RANGE: 2,683 km

USERS: Belgium, Canada, Denmark, Greece, Italy, Japan, Netherlands, Norway, Republic of China, Turkey, West Germany



F-111



FIXED WING

RECOGNITION FEATURES: Fighter/bomber with variable-sweep wings, high-mounted, tapered, backswept with blunt tips (wingspan may be changed in flight); two turbojet engines mounted inside rear section of body with air intakes along side body, beneath wings; long, needle-nosed body widens at air intakes on midsection and continues through rear section; stepped-up cockpit located forward of wing roots; large backswept tail fin with square tip.

ARMAMENT: Conventional weapons including Sidewinder missiles and 20mm cannons; 12,000-lb bomb load

SPEED: 2,960 km/hr

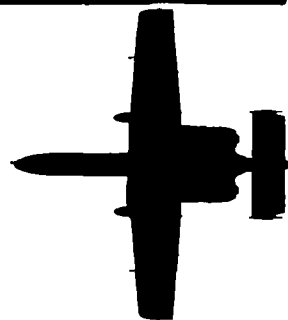
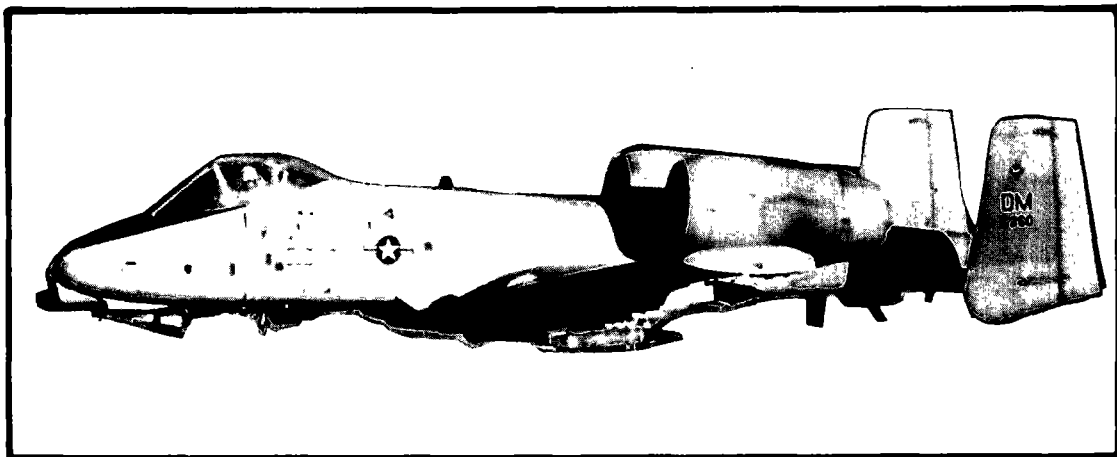
RANGE: 6,105 km

USERS: Australia, United States

EMPLOYMENT: Fighter/bomber

NOTE: FB-111 (modified F-111A) is all-weather strategic bomber designed for low altitude penetration and attack missions against surface targets.

A-10A - THUNDERBOLT II



FIXED WING

RECOGNITION FEATURES: Single-seat, close-support monoplane with cantilever low-wing, semimonocoque fuselage; cantilever tail with twin fins; tricycle landing gear with single wheel in each unit; wheels retract forward, leaving approximately one-half of each wheel protruding from fairing.

ARMAMENT: 30mm cannons
16,000 lbs of external conventional ordnance

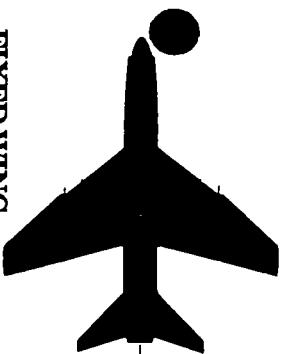
SPEED: 713 km/hr

RANGE: 1,000 km

USERS: United States

EMPLOYMENT: Close air support

A-7 CORSAIR II



FIXED WING



60

RECOGNITION FEATURES: Single-seat, tactical fighter/light attack bomber; high-mounted, gradually tapered, backswept wings with blunt tips; one turbofan engine mounted in rear of body with air intake under nose; long thick body with blunt nose and tail section; bubble cockpit located forward on nose section; backward tapered, backswept, blunt-tipped tail fin.

ARMAMENT: Air-to-surface missiles, bombs, rockets, sidewinders, 20mm cannon, and other conventional munitions

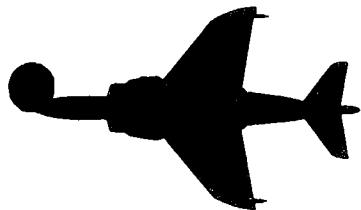
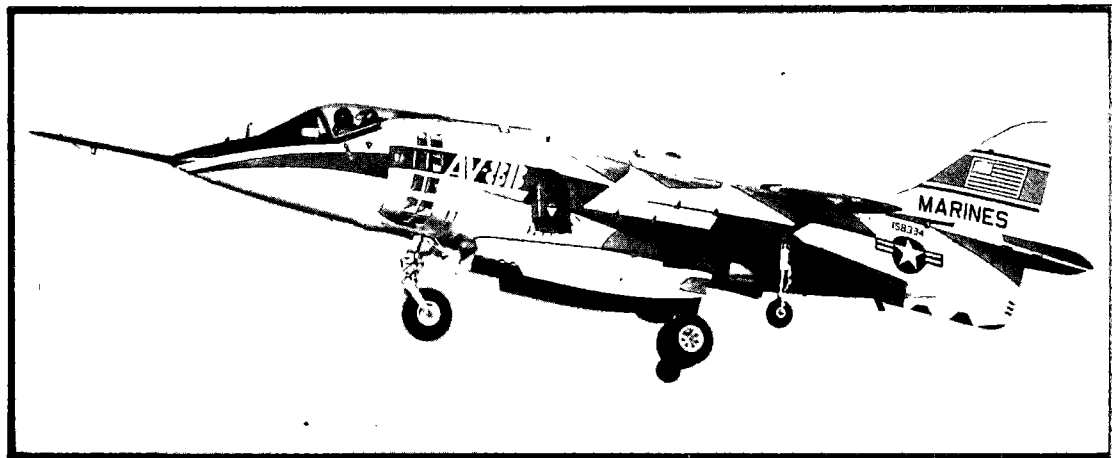
SPEED: 1,117 km/hr

RANGE: 5,365 km

USERS: United States

EMPLOYMENT: Tactical attack and support

AV-8 HARRIER



FIXED WING

RECOGNITION FEATURES: VSTOL fighter/ground attack; high-mounted small, semi-delta wings with square tips; wingtip extensions are fitted for ferrying; one turbojet engine mounted inside body with air intake and exhaust nozzles mounted alongside belly of body midsection; thick round midsection tapers to pointed nose and rear; stepped-up bubble cockpit located forward on nose section; backward-tapered fin with blunt tip.

ARMAMENT: Varied—in under fuselage pods and four underwing storage points

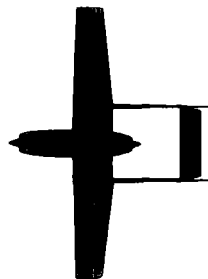
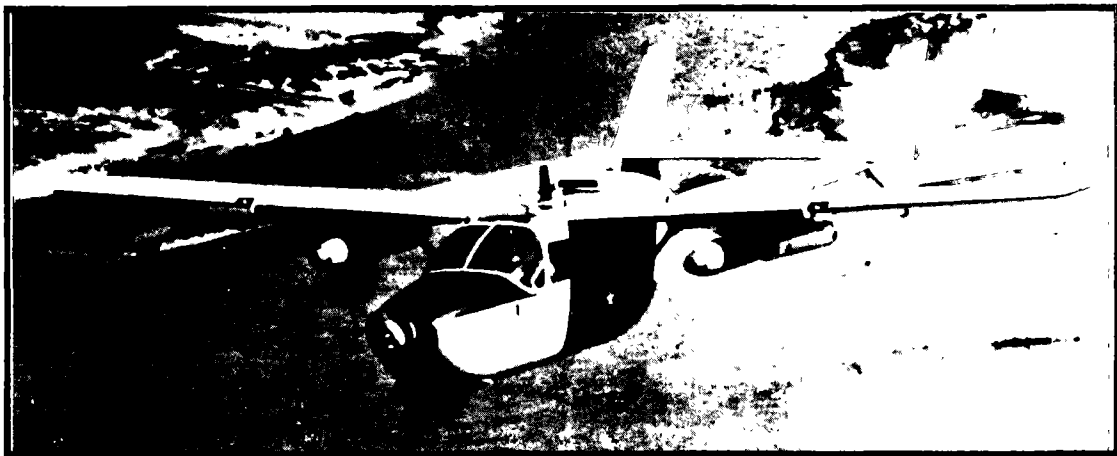
SPEED: 1,179 km/hr

RANGE: 3,700 km

USERS: Spain, United Kingdom, United States, West Germany

EMPLOYMENT: Strike and reconnaissance fighter, as AV-8A in Marine Corps, also as trainer (TAV-8A) by Marine Corps and RAF (T2 and T4).

O-2 - SKYMASTER



FIXED WING

RECOGNITION FEATURES: Tandem engine aircraft, high-mounted wings with uneven taper and blunt tips; two reciprocating engines are located to front and rear of body with rear engine mounted higher than front engine; rear engine powers a pusher propeller; body is a modified cube with sharply defined spinners at front and rear; twin booms, tapering to the rear from the wing; each tailboom ending in a backswept tail fin with dual-tapered leading edge. Has peculiar identifying sound due to fore and aft propellers.

ARMAMENT: Rockets, flares, lightweight conventional ordnance
7.62mm minigun

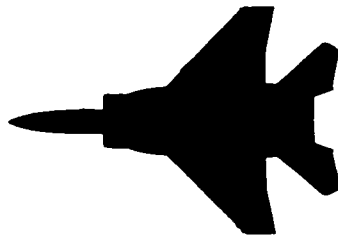
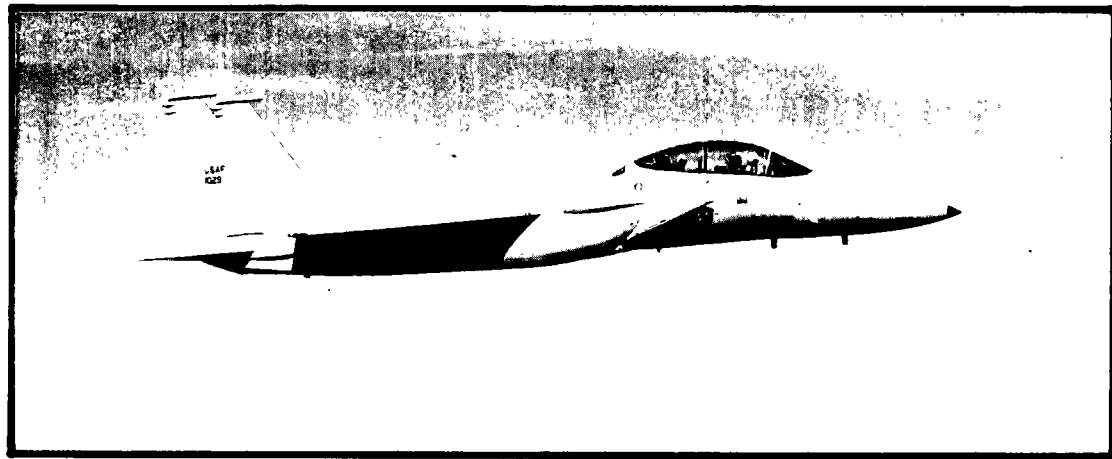
SPEED: 400 km/hr

RANGE: 1,767 km

USERS: Iran, United States

EMPLOYMENT: Forward air control, ground-air coordination, psychological warfare, and damage assessment

F-15 EAGLE



FIXED WING

RECOGNITION FEATURES: Single-seat; high-mounted, tapered, backswept wings with blunt tips; two turbofan engines side-by-side in rear of body; straight two dimensional inlets on either side of body; center fuselage is a box structure; forward fuselage section comprises cockpit and nose, and the aft section airfoil shape to minimize drag; twin vertical fins mounted adjacent to the rear of both exhausts.

ARMAMENT: Varied under fuselage and wings

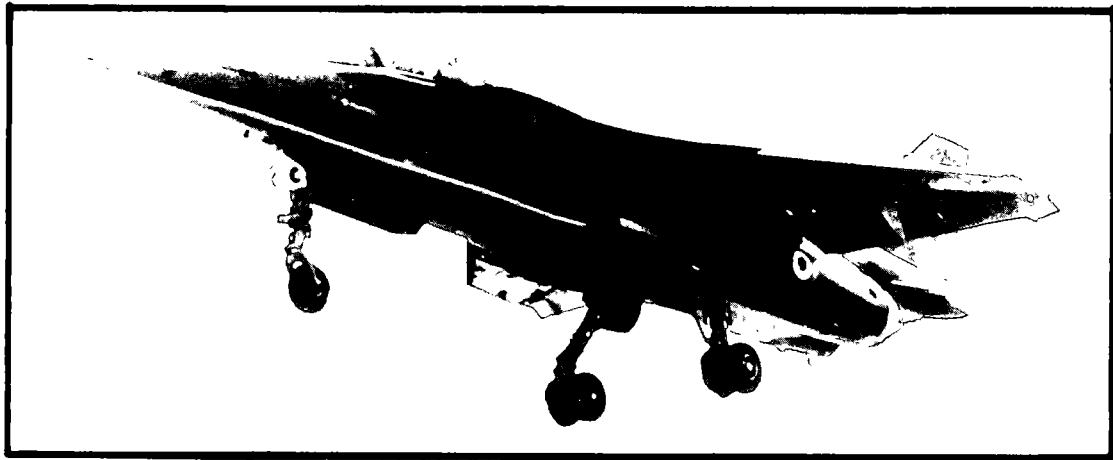
SPEED: 2,655 km/hr

RANGE: Unavailable

USERS: Israel, United States

EMPLOYMENT: Superiority and multi-purpose fighter (also advanced trainer TF-15)

JAGUAR



FIXED WING

RECOGNITION FEATURES: High-mounted modified delta wings have squared tips; two turbofan engines mounted to rear of cockpit with rectangular air intakes on either side of cockpit. Engine exhausts are prominent under forward portion of tail assembly. Body has long pointed tubular nose, widening at air intake to become rectangular back to engine exhausts. Trainer version has nose 3 feet longer; fin is backswept and cut off at tips; rear behind exhausts is upswept.

ARMAMENT: Varied—30mm cannon
Conventional ordnance on under wing and fuselage points

SPEED: 1,950 km/hr

RANGE: 4,200 km

USERS: France, United Kingdom

EMPLOYMENT: Ground attack/tactical support, trainer (Jaguar T2 and E)

Yak-28 BREWER



FIXED WING

RECOGNITION FEATURES: Wings high-mounted and backswept; two engine pods attached at the bottom of the wings extend beyond wings; long pointed body with transparent nose and needle-like probe; narrow backswept horizontal stabilizer and tail fin; belly-mounted fin.

ARMAMENT: Various bomb and rocket combinations

GUN RANGE: Dependent upon armament

SPEED: 1,180 km/hr

RANGE: 2,575 km

USERS: USSR

EMPLOYMENT: Fighter/bomber, all-weather

NOTE: Yak-28 P FIREBAR is the interceptor variant of this aircraft.

MiG-27 FLOGGER-D



RECOGNITION FEATURES: High-mounted (variable) wings; long tubular body except where dual air intakes give a box-like appearance; extended needle nose; single tail fin, with ventral fin underneath fuselage; single engine.

ARMAMENT: 1 x 6-barrel, 23mm Gatling gun with laser range finder
4 x 500 kg bombs or 4 x 16 57mm rockets

GUN RANGE: 1,000 meters

SPEED: 1,700 km/hr

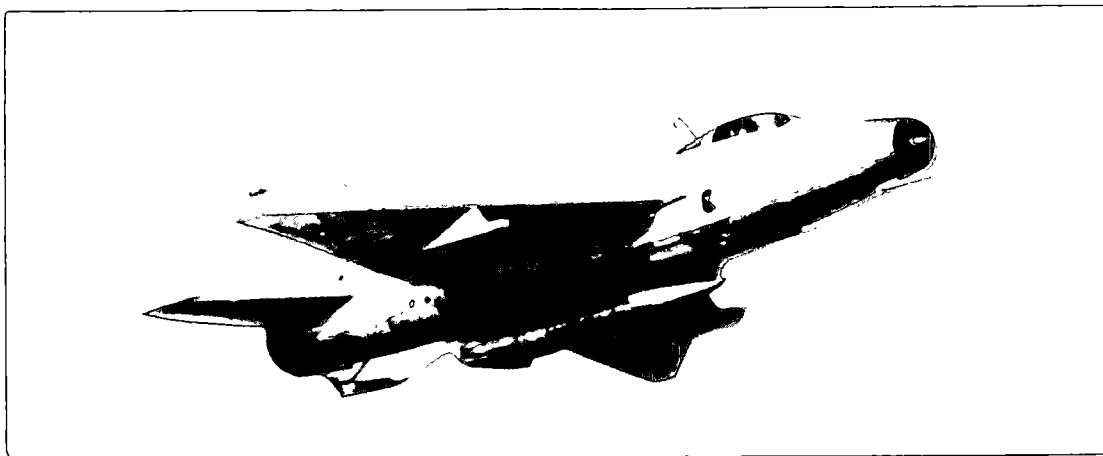
RANGE: 900 km (operational radius)

USERS: USSR (variants other than Flogger-D), East Germany, Egypt, Iraq, Libya, Syria

EMPLOYMENT: Ground attack

NOTE: The Flogger-D is equipped with terrain-avoidance radar. Other variants (MiG-23) are available with other equipment for additional missions.

MiG-21 FISHBED



RECOGNITION FEATURES: Downward slanting, mid-mounted, delta wings; single engine; long tubular body with bubble cockpit back on nose section; sharply backswept tail fin; square tips on horizontal stabilizer.

ARMAMENT: 1 x 2 barrelled 23mm gun, varied missiles, 2 x 500 kg and 2 x 250 kg bombs, or 4 x 16, 57mm rockets

GUN RANGE: 1,000 meters

SPEED: 2,070 km/hr

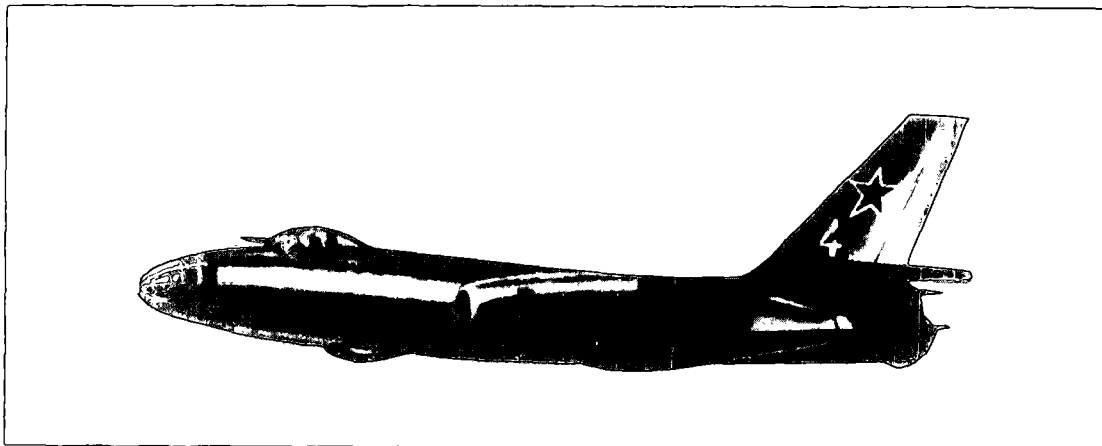
RANGE: 1,297 km

1,800 km with external tanks

USERS: Afghanistan, Albania, Algeria, Bangladesh, Bulgaria, Cuba, Czechoslovakia, East Germany, Egypt, Finland, Hungary, India, Indonesia, Iran, Iraq, North Korea, People's Republic of China, Poland, Romania, Syria, Tanzania, USSR, Vietnam, Yugoslavia

EMPLOYMENT: Fighter/interceptor, all-weather; later versions used for close air support

IL-28 BEAGLE



RECOGNITION FEATURES: Straight leading and forward-tapered, trailing-edged wings mounted high on body; engine pods mounted beneath the wings; rounded body has blunt transparent nose with bubble cockpit; rear gunner's compartment.

ARMAMENT: 2 x 23mm cannons
Various bomb configurations

GUN RANGE: 1,100 meters with bomb load

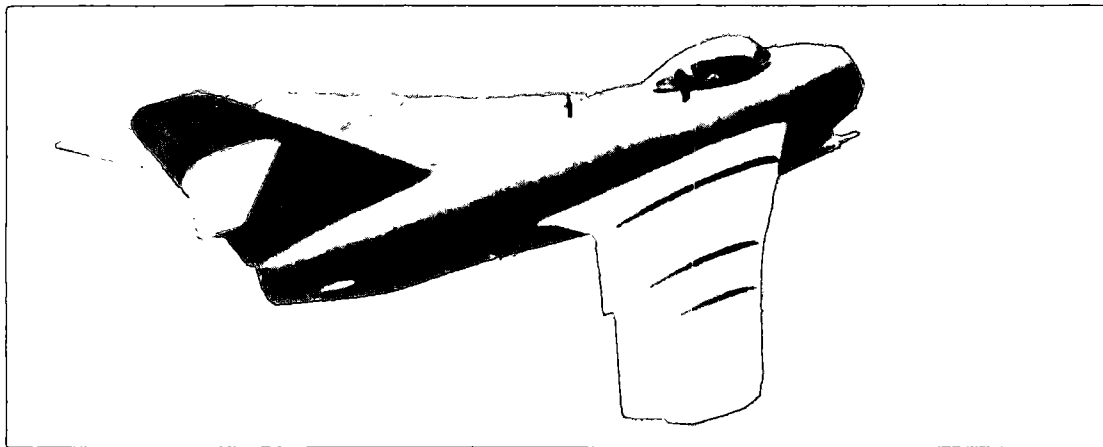
SPEED: 933 km/hr

RANGE: 1,931 km

USERS: Algeria, Bulgaria, Cuba, Czechoslovakia, Egypt, Finland, Hungary, Indonesia, Iraq, North Korea, People's Republic of China, Poland, Romania, Syria, USSR

EMPLOYMENT: Light attack bomber

MiG-17 FRESCO



RECOGNITION FEATURES: Mid-mounted, backward-tapered wings with rounded tips; single engine; stubby, cigar-shaped body with bubble cockpit well forward on nose; backward-tapered tail fin; horizontal stabilizer mounted high.

ARMAMENT: 1 x 37mm cannon
2 x 23mm cannon

GUN RANGE: 1,500 meters

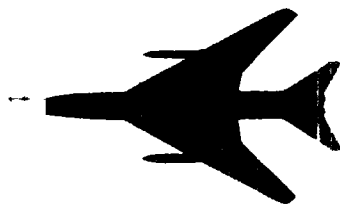
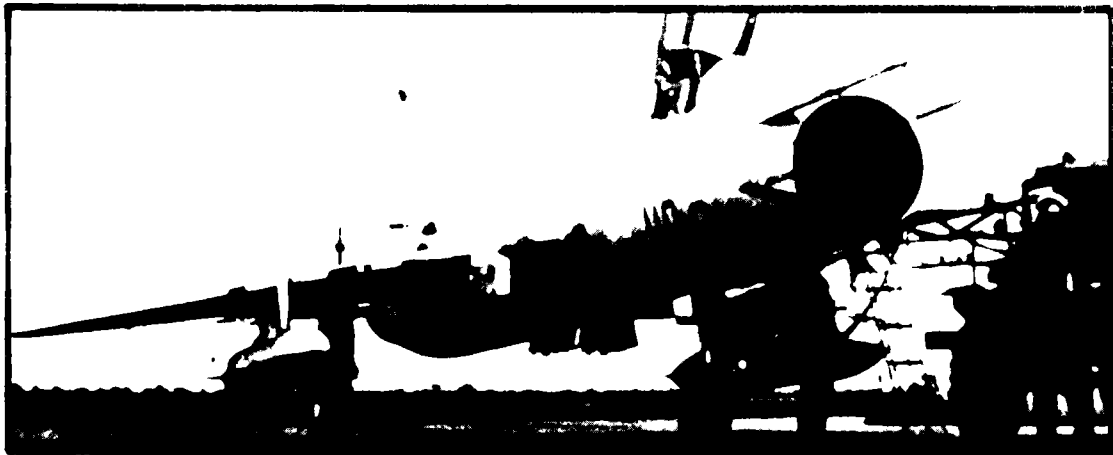
SPEED: 1,127 km/hr

RANGE: 2,037 km

USERS: Albania, Algeria, Bulgaria, Cuba, Czechoslovakia, East Germany, Egypt, Finland, Hungary, Indonesia, Iran, Iraq, Libya, North Korea, People's Republic of China, Poland, Romania, Somali Republic, Sudan, Syria, Uganda, USSR

EMPLOYMENT: Fighter/bomber/interceptor

Su-17 FITTER C



FIXED WING

RECOGNITION FEATURES: Low-mounted, semi-delta, swing wings; single engine; round intake and exhaust; long tubular body with blunt nose; large bubble cockpit mounted atop the nose section forward of the wing roots; tapered, backswept horizontal stabilizer and fin.

ARMAMENT: 2 x 30mm cannon

Bombs, rockets, or air-launched missiles up to 3,500 kg

GUN RANGE: 1,500 meters

SPEED: 2,000 km/hr

RANGE: 960 km (operational radius)

USERS: Poland, USSR

EMPLOYMENT: Close air support, all-weather; can carry maximum payload of 11,000 lbs

NOTE: Other variants of the FITTER have been exported.

MiG-19 FARMER



RECOGNITION FEATURES: Single-seat; sharply backswept wings, mid-mounted with one wing fence on each wing; two engines; thick, flattened, untapered body with blunt nose; bubble cockpit well forward on nose section.

ARMAMENT: 3 x 30mm cannons

Air-to-air missiles

GUN RANGE: 1,500 meters

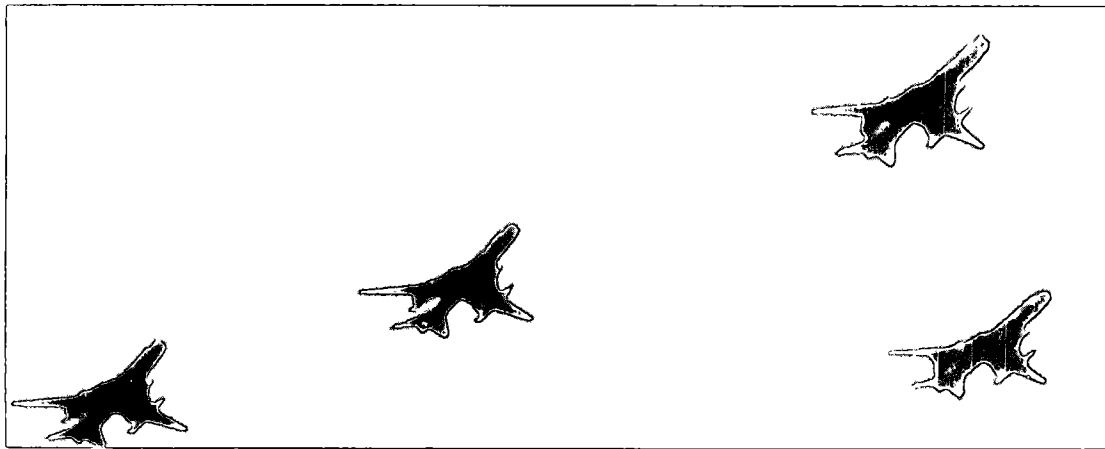
SPEED: 1,448 km/hr

RANGE: 2,253 km

USERS: Albania, Bulgaria, Cuba, Czechoslovakia, East Germany, Egypt, Finland, Hungary, India, Indonesia, Iran, North Korea, People's Republic of China, Poland, Romania, USSR

EMPLOYMENT: Day fighter/interceptor

Su-19 - FENCER-A



RECOGNITION FEATURES: Variable sweep wings; high-mounted, rounded tips; long slender fuselage; pointed solid nose; twin turbofan engines; fuselage-mounted intakes forward of wing leading edge; swept and cut back horizontal stabilizers mid-mounted on fuselage; swept vertical; low-profile canopy bubble forward of engine intakes.

ARMAMENT: 1 x 6-barrel, 23mm Gatling gun
Bombs, rockets, air-launched missiles up to 5,000 kg

MAIN GUN RANGE: 1,000 meters

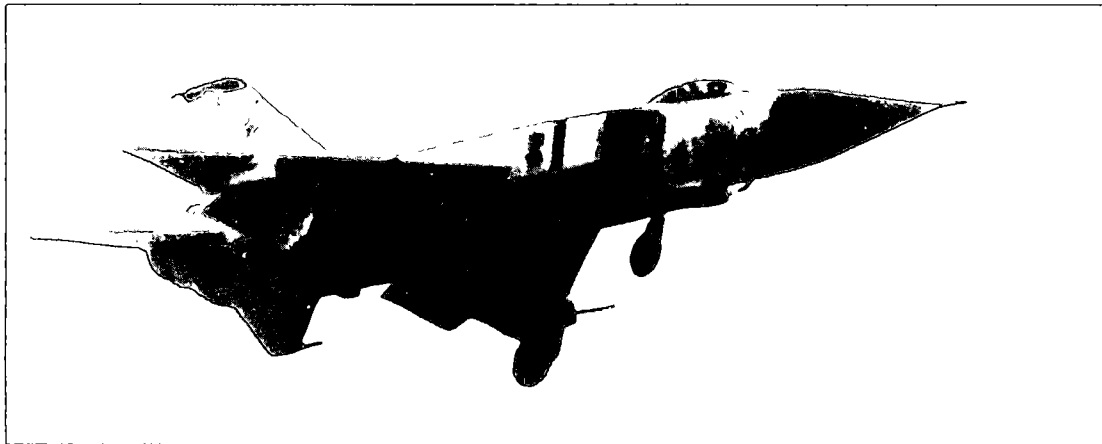
SPEED: 2,445 km/hr

RANGE: 1,200 km (operational radius)

USERS: East Germany, USSR

EMPLOYMENT: Ground attack with inertial navigation system and terrain-following radar, the FENCER can fly fast and low to attack targets deep behind the FEBA.

Su-15 FLAGON



RECOGNITION FEATURES: Mid-mounted delta wings with small squared tips; wide blunt tail; additional thrust is provided by another engine in central portion of the fuselage; fuselage is squared and tapered to pointed nose; swept horizontal stabilizers mid-mounted on fuselage; bubble-type canopy forward of delta wings; B-model has lift jets.

ARMAMENT: Bomb and rocket combinations

GUN RANGE: Unavailable

SPEED: 2,655 km/hr
1,464 km/hr (at low altitude)

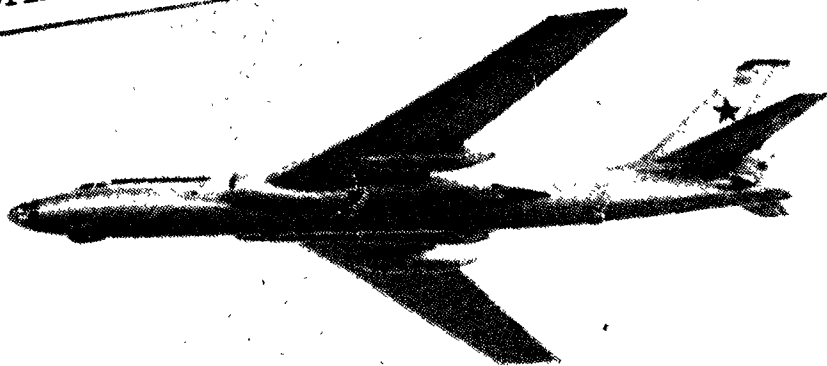
RANGE: 900 km (operational radius)

USERS: USSR

EMPLOYMENT: Specifically for use at airfields with short runways. All-weather fighter-bomber.

FIXED WING

Tu-16 BADGER



RECOGNITION FEATURES: Swept wings, mid-mounted, squared tips; long slender fuselage; pointed nose may be glazed or solid; two turbojet engines in nacelles mounted in wing roots; swept horizontal stabilizers mounted low on swept vertical; landing gear pods extend beyond wing trailing edge.

ARMAMENT: Air-to-surface missiles (some versions)

GUN RANGE: Unavailable

SPEED: 939 km/hr

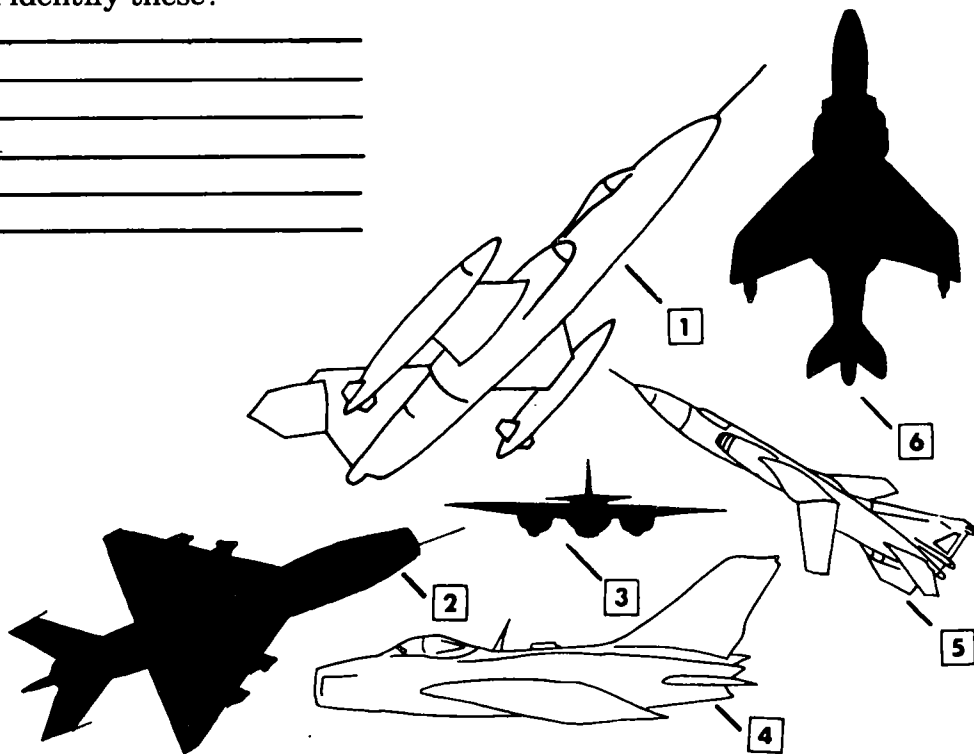
RANGE: 4,810 km

USERS: Bulgaria, Egypt, Indonesia, Iraq, People's Republic of China, USSR

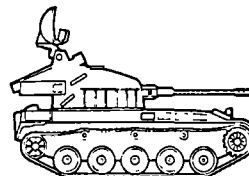
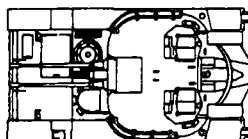
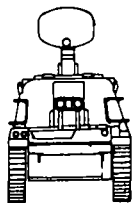
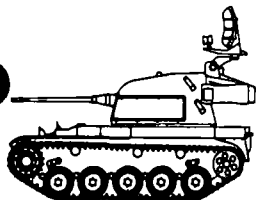
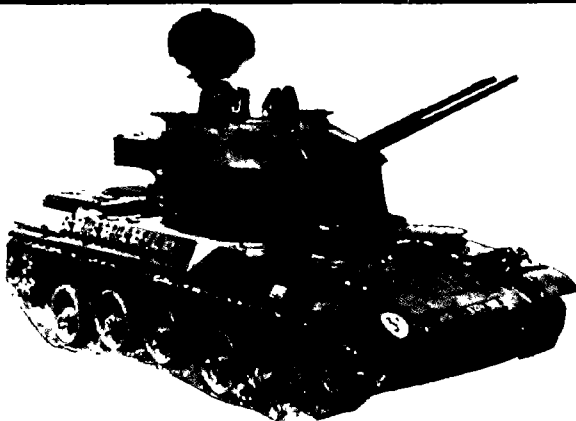
EMPLOYMENT: Used extensively for electronic warfare near the battlefield; also maritime reconnaissance; transport version has thicker body.

Can you identify these?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____



AMX DCA 13/30* - Antiaircraft, Self-Propelled



AA & SAMS

RECOGNITION FEATURES: Full-tracked; five-roadwheeled, three support rollers; same chassis as AMX 30; high-silhouetted turret; contains twin mounted 30mm guns; radar dish-mounted top, left rear of turret.

ARMAMENT: 2 x 30mm Vickers antiaircraft guns

GUN RANGE: 2,000 meters

SPEED: 59 km/hr

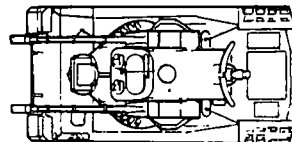
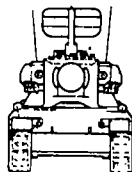
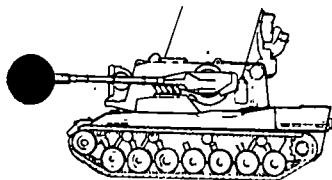
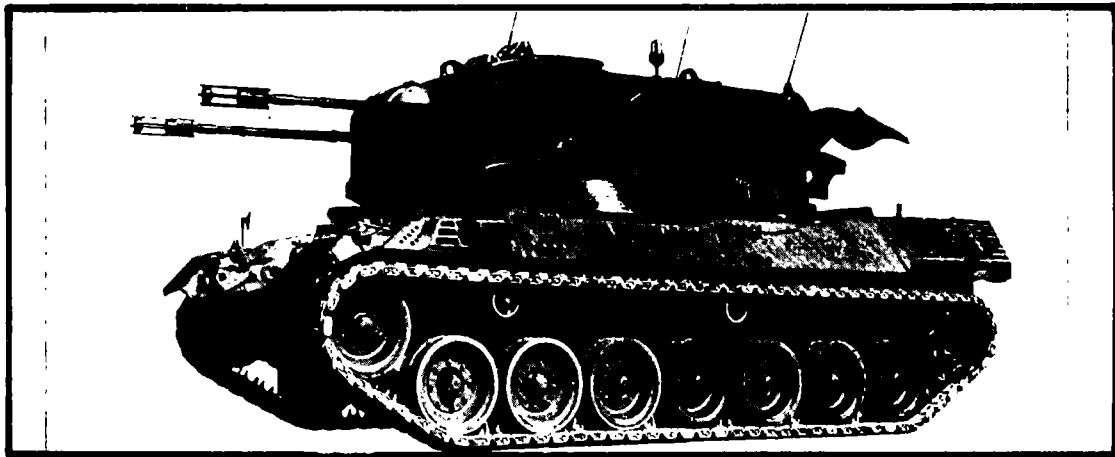
RANGE: 482 km

USERS: France, Saudi Arabia

EMPLOYMENT: Mechanized infantry support, battalion antiaircraft

*The guns and turret on the AMX 13 and AMX 30 are the same. Chassis has some variation with AMX 30, having greater horsepower. General configuration of both is similar, except that the AMX DCA 13 has high-silhouetted turret mounted on rear of chassis and the AMX DCA 30 has high-silhouetted turret mounted on center of chassis.

Twin SPAA Gun GDP-BO-3 (GEPARD)



AA & SAMS

RECOGNITION FEATURES: Leopard tank chassis; twin, exterior-mounted cannon; track radar antenna on top rear of turret.

ARMAMENT: 1 x twin 35mm cannon

GUN RANGE: 4,000 meters

SPEED: 70 km/hr

RANGE: 600 km

USERS: Belgium, West Germany

EMPLOYMENT: Generally used with armor units

M-163 (VULCAN) - Antiaircraft Gun, Self-Propelled



ARMAMENT: 1 x 20mm cannon (6 barrels)

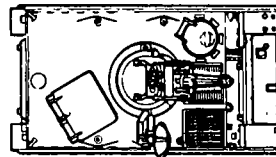
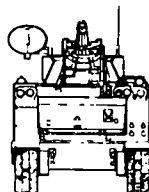
GUN RANGE: AD—1,300 meters
Direct—3,000 meters

SPEED: 68 km/hr

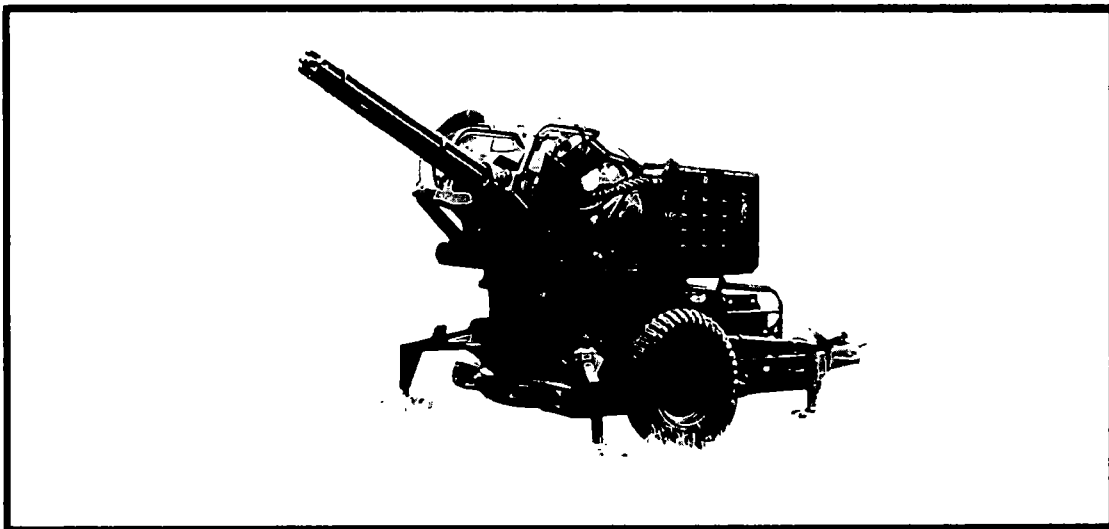
RANGE: 490 km

USERS: Israel, Jordan, Saudi Arabia, United States

AA & SAMS



VULCAN M-167-A1 (TOWED)



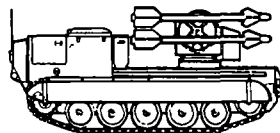
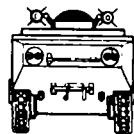
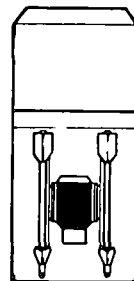
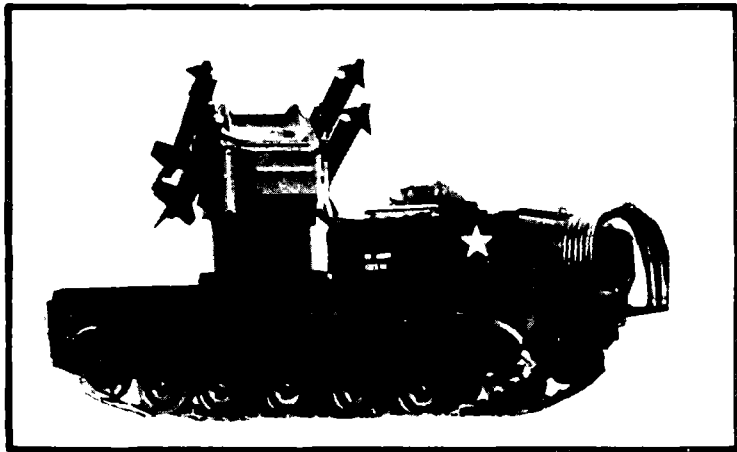
ARMAMENT: 1 x 20mm cannon (6 barrels)

GUN RANGE: AD — 1,200 meters

Direct — 3,000 meters

USERS: Morocco, South Korea, United States

CHAPARRAL AIR DEFENSE GUIDED MISSILE SYSTEM



ARMAMENT: 4 x Chaparral surface-to-air missiles

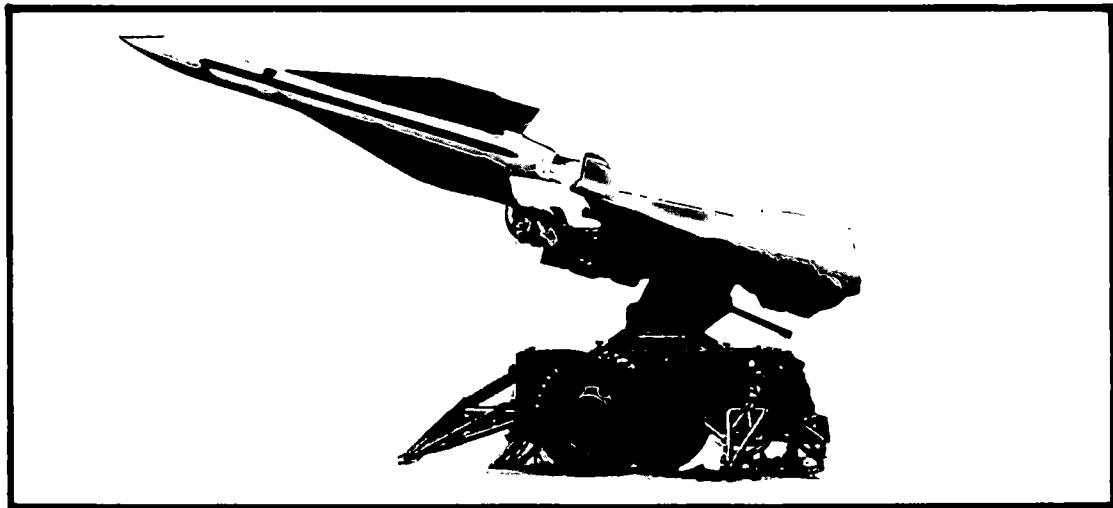
TACTICAL ANTIAIRCRAFT RANGE: 5,000 + meters

RANGE: 480 km

USERS: United States

AA & SAMS

HAWK SURFACE-TO-AIR WEAPON SYSTEM

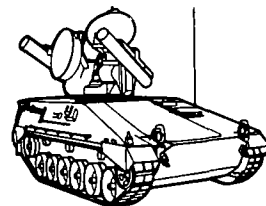
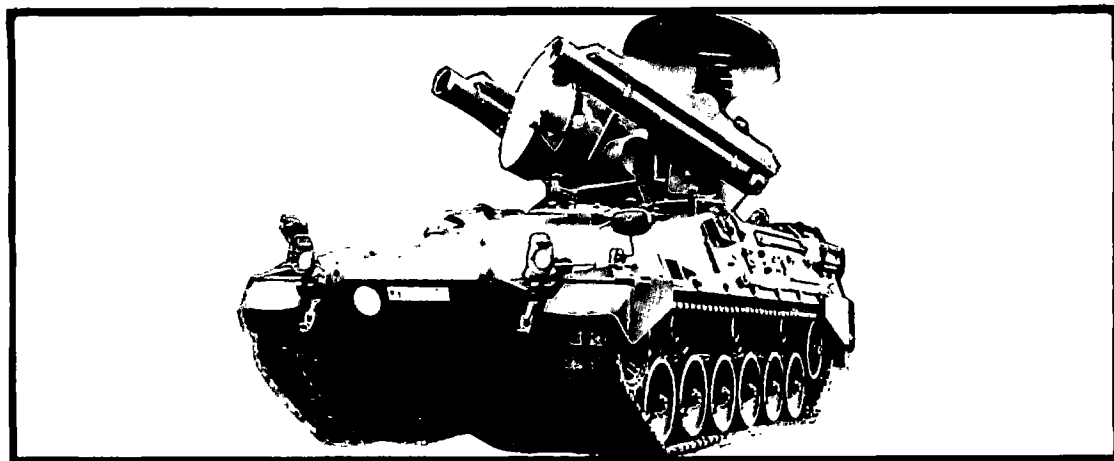


ARMAMENT: 3 x Hawk surface-to-air missiles

TACTICAL ANTIAIRCRAFT RANGE: 40,000 meters

USERS: Belgium, Denmark, France, Israel, Italy, Japan, Netherlands, Saudi Arabia, South Korea, Spain, Sweden, Taiwan, United States, West Germany

ROLAND SURFACE-TO-AIR ANTIAIRCRAFT SYSTEM



RECOGNITION FEATURES: Mounted on AMX 30 chassis; prominent radar dish; distinctive "stove pipe" missile launcher tubes.

ARMAMENT: (ROLAND) missiles

MISSILE RANGE: 6 km

RADAR RANGE: 18 km

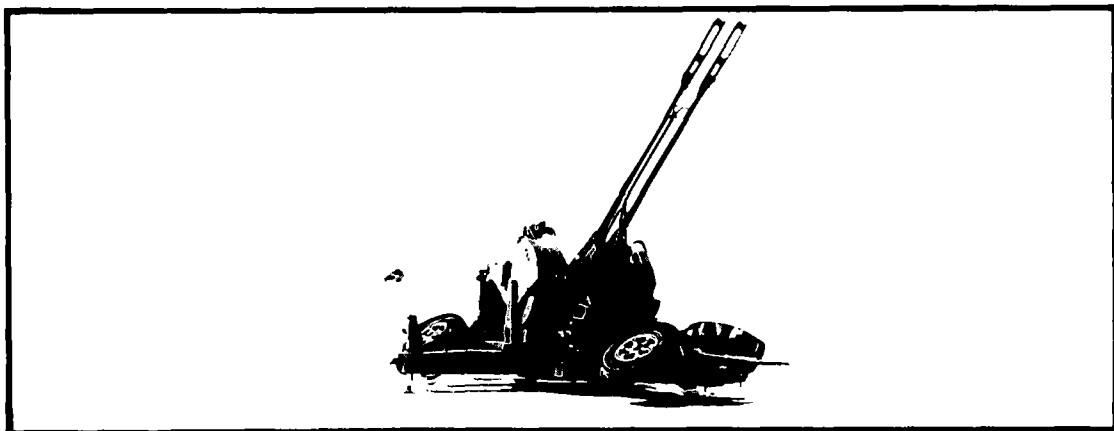
SPEED: 65 km/hr

RANGE: 600 km

USERS: France

EMPLOYMENT: All-weather, low, and very low level

SWISS TWIN 35mm 2ZLA ANTI-AIRCRAFT



RECOGNITION FEATURES: Twin cannons, towed, four-wheeled, two prominent ammunition holders.

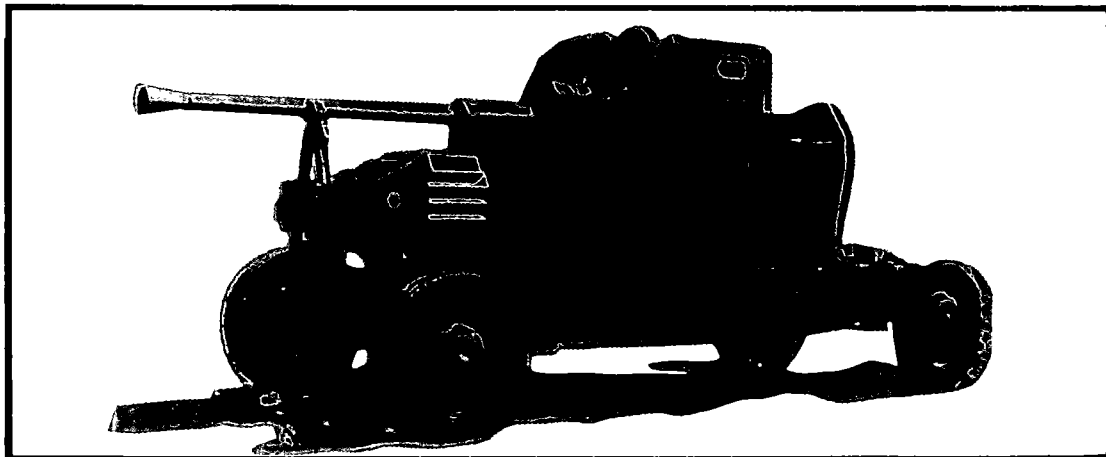
ARMAMENT: 1 x twin 35mm cannon

ACTUAL ANTI-AIRCRAFT RANGE: 3,000 meters, optical
4,000 meters, radar

USERS: Various

EMPLOYMENT: Light anti-aircraft

BOFORS 40MM L/70 ANTIAIRCRAFT GUN



RECOGNITION FEATURES: Single-barrel, on-carriage generator, crew shield.

ARMAMENT: 1 x 40mm cannon

TACTICAL ANTIAIRCRAFT RANGE: 4,000 meters

USERS: Various Free World

EMPLOYMENT: General AD and at airfields; latest version has on-carriage fire control system

DUTCH 35MM SPAA GUN SYSTEM CA1 (CAESAR)



RECOGNITION FEATURES: Same as West German Gepard, except for different radar; Leopard tank chassis; twin exterior mounted cannon; distinctive radar.

ARMAMENT: 1 x twin 35mm cannon

GUN RANGE: 4,000 meters

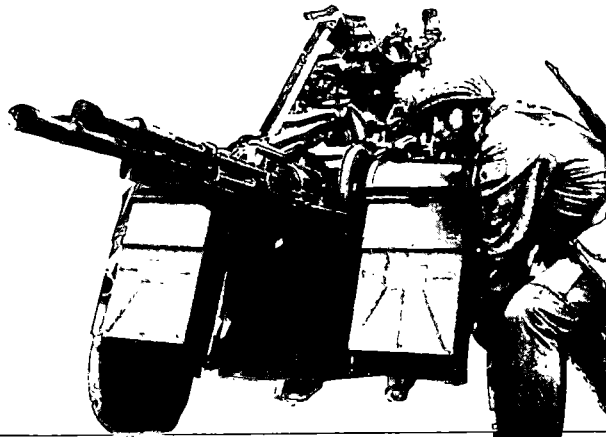
SPEED: 70 km/hr

RANGE: 500 km

USERS: Netherlands

EMPLOYMENT: With armor units

ZPU-2 (14.5mm Machinegun)



RECOGNITION FEATURES: Platform mount with 2 x 14.5mm heavy machineguns; sighting device; operator's seat; single axle trailer.

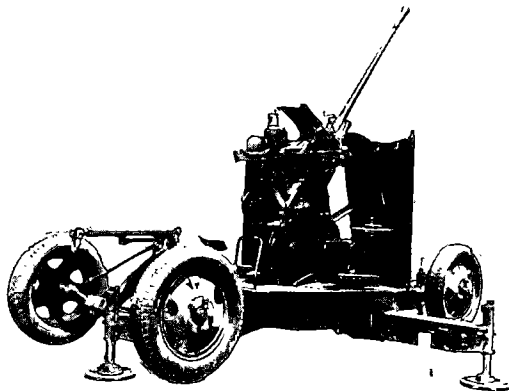
ARMAMENT: 2 x 14.5mm machineguns

TACTICAL ANTI-AIRCRAFT RANGE: Maximum vertical — 5,000 meters
Effective anti-aircraft — 1,400 meters

USERS: Mid East, People's Republic of China, Warsaw Pact

EMPLOYMENT: Light anti-aircraft, signature equipment of motor rifle regiment.
Being replaced by ZU-23, twin automatic anti-aircraft cannon.

SOVIET 37MM ANTIAIRCRAFT GUN M1939



RECOGNITION FEATURES: Single-barrel, towed, four-wheeled carriage.

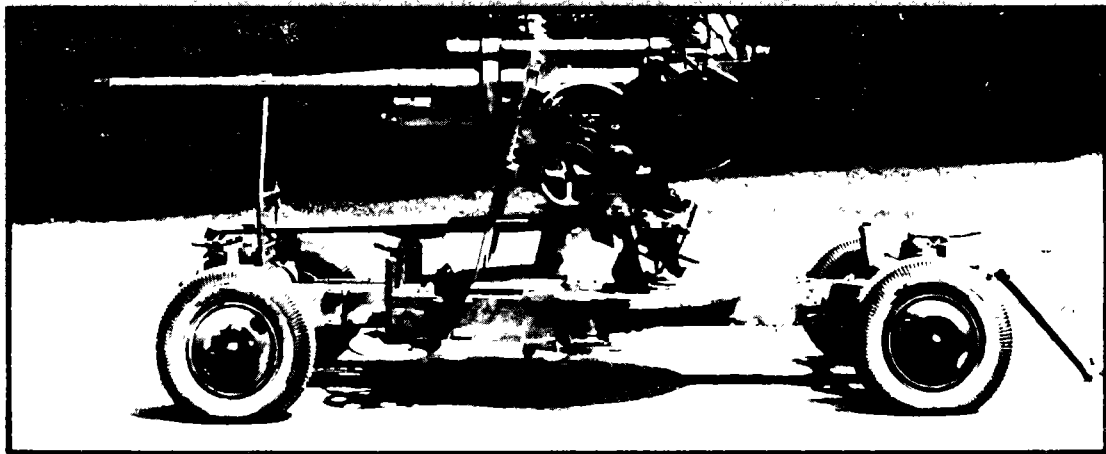
ARMAMENT: 1 x 37mm cannon

TACTICAL ANTIAIRCRAFT RANGE: 2,500 meters

USERS: Various

EMPLOYMENT: Light antiaircraft

SOVIET 85MM ANTIAIRCRAFT GUN M1939



RECOGNITION FEATURES: Long barrel, towed, four-wheeled, simplistic silhouette.

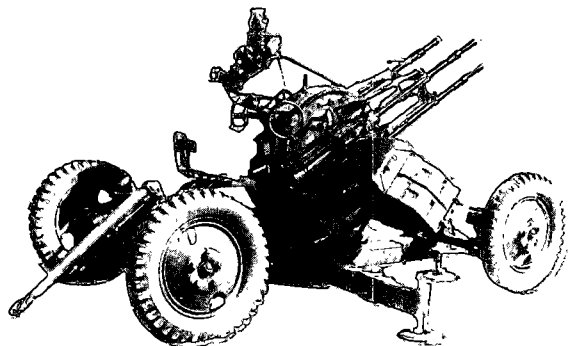
ARMAMENT: 1 x 85mm cannon

TACTICAL ANTIAIRCRAFT RANGE: 10,200 meters

USERS: Various

EMPLOYMENT: General AD, point or fixed installations

ZPU-4 (14.5mm Machinegun)



RECOGNITION FEATURES: Similar to our quad 50s; system contains wheeled-mount with 4 x 14.5mm heavy machineguns, their ammunition cans and sighting device; seat for operator.

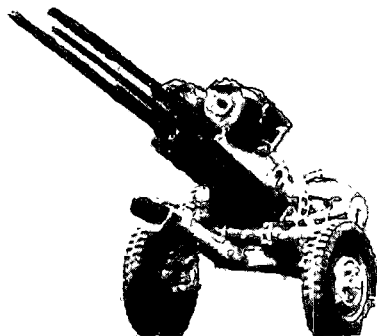
ARMAMENT: 4 x 14.5mm machinegun

TACTICAL ANTIAIRCRAFT RANGE: Maximum vertical—5,000 meters
Effective antiaircraft—1,400 meters

USERS: Mid East, People's Republic of China, Warsaw Pact

EMPLOYMENT: Light antiaircraft

M-55 20mm Antiaircraft System (YUGOSLAV)



H55 804/630-3 (SWISS)*

*Swiss-designed system, licensed for manufacture in Yugoslavia. Widely distributed.

RECOGNITION FEATURES: Wheeled-mount carrying 3 x 20mm cannons, their ammunition cans and sights, with a gunner seat.

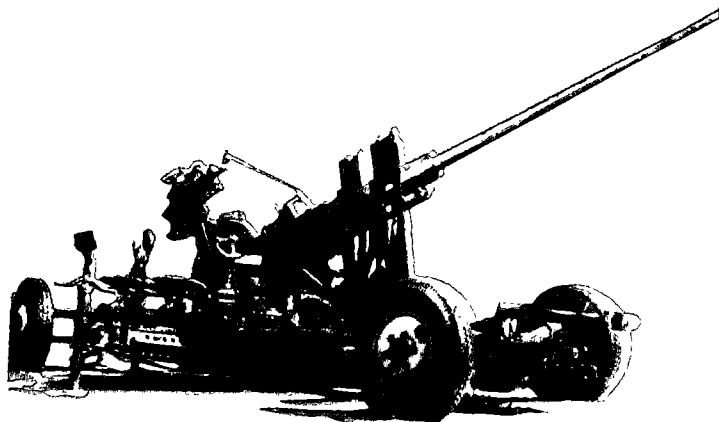
ARMAMENT: 3 x 20mm cannon

TACTICAL ANTIAIRCRAFT RANGE: Maximum vertical—4,500 meters
Effective antiaircraft—1,500 meters

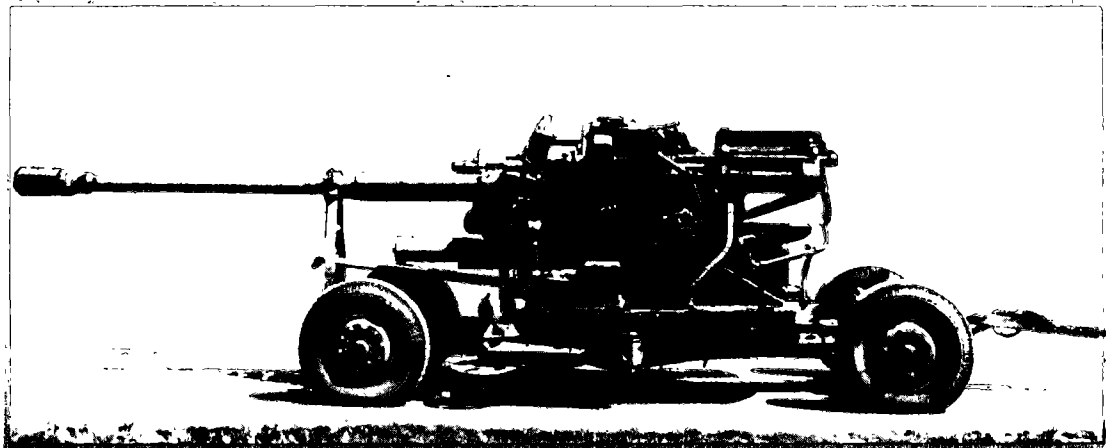
USERS: Yugoslavia

EMPLOYMENT: Light antiaircraft

S-60 (57mm Antiaircraft Gun)



KS-19 (100mm Antiaircraft Gun) Towed



RECOGNITION FEATURES: Four-wheeled, framed chassis holds 1 x 100mm gun; long tube with multi-baffle muzzle brake; shields provided around crew area.

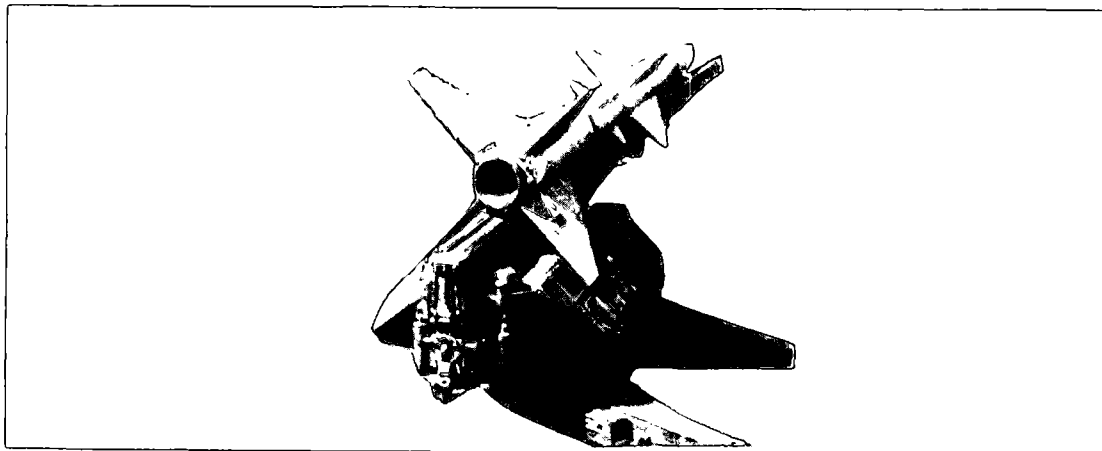
ARMAMENT: 1 x 100mm antiaircraft cannon

TACTICAL ANTIAIRCRAFT RANGE: 12,600 meters

USERS: People's Republic of China, Warsaw Pact, various

EMPLOYMENT: Antiaircraft fire, also antitank, deployed in batteries

SA-2 (GUIDELINE)



RECOGNITION FEATURES: Two-stage, ground-mounted missile, found on single launchers; narrow pencil-like body with groups of (4) stabilization fins; found in groups of six in a star-like formation.

ARMAMENT: 1 x SA-2 (GUIDELINE) missile

MISSILE RANGE: 55,000 meters

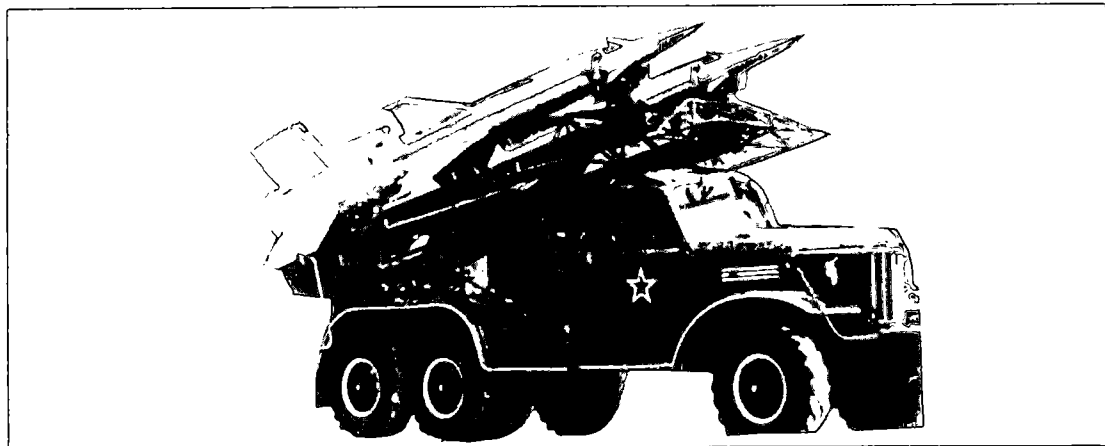
Maximum altitude—24,000 meters

Minimum altitude—1,000 meters

USERS: Far East, Mid East, Warsaw Pact

EMPLOYMENT: Grouped in batteries and organic to the Combined Arms Army; defends high altitude approaches to static assets in rear areas. Restricted capability against low altitude targets.

SA-3 (GOA)



RECOGNITION FEATURES: Mounted on a six-wheeled ZIL-157 heavy utility truck are 2 x SA-3 (GOA) missiles; these are two-staged and have front, middle, and rear stabilization fins.

ARMAMENT: 2 x SA-3 (GOA) missiles

TACTICAL ANTIAIRCRAFT RANGE: 30,000 meters

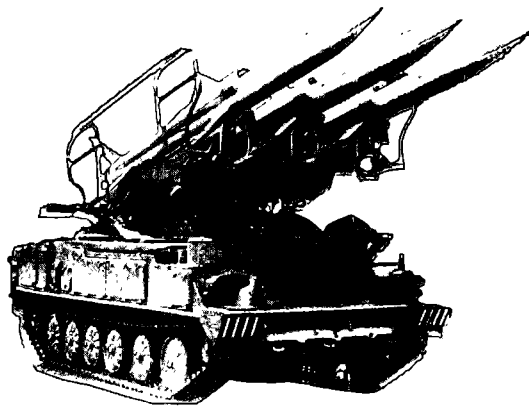
SPEED: 50 km/hr (carrier)

RANGE: 300 km

USERS: USSR, Warsaw Pact

EMPLOYMENT: Employed in an antiaircraft role in the Combined Arms Army; provides low-altitude air defense.

SA-6 (GAINFUL)



RECOGNITION FEATURES: Using same chassis as ZSU-23-4 (modified PT-76 tank chassis); instead of turret, mounts a missile rack containing 3 x SA-6 antiaircraft missiles.

ARMAMENT: 3 x SA-6 (GAINFUL) missiles

MISSILE RANGE: Maximum altitude—18,000 meters

Minimum altitude—100 meters

Range: 30,000 meters

SPEED: 45 km/hr (carrier)

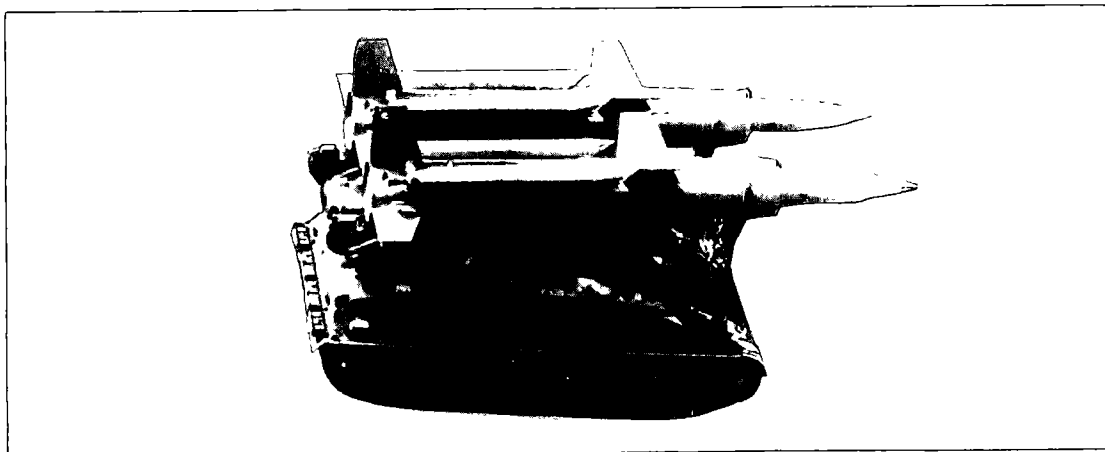
RANGE: 250 km

USERS: USSR

EMPLOYMENT: Low to medium altitude, surface-to-air guided missile employed in a battery and deployed in the forward division areas; supplements the ZSU-23-4 and SA-4 in air defense; may be deployed in battery configuration from 5 to 10 km behind frontlines.

NOTE: Vulnerable to suppressive fires and ECM.

SA-4 (GANEF)



RECOGNITION FEATURES: Full-tracked, seven-roadwheeled vehicle, carrying two huge two-stage missiles, the point of which overhangs the front of the vehicle.

ARMAMENT: 2 x SA-4 (GANEF) missiles

MISSILE RANGE: 70,000 meters

Maximum altitude— 18,000 meters

SPEED: 36 km/hr (carrier)

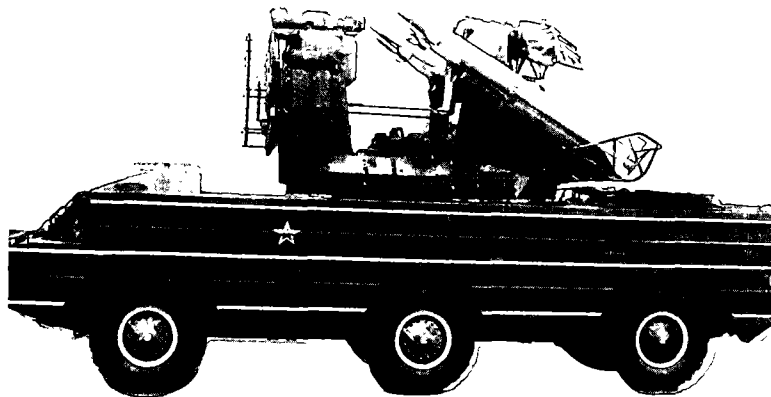
RANGE: 250 km

USERS: USSR

EMPLOYMENT: Antiaircraft guided missiles accompanying field troops; organic to the Combined Arms Army.

NOTE: Vulnerable to suppressive fires and ECM. Capabilities reduced significantly when on the move.

SA-8 (GECKO)



RECOGNITION FEATURES: 6 x 6 truck chassis, three-axle, amphibious vehicle, highly mobile, air transportable, four 10-foot missiles on an integrated rotatable turret.

ARMAMENT: 4 x SA-8 (GECKO) missiles

MISSILE RANGE: 12 km

RADAR: Surveillance radar range—30 km

Acquisition radar range—20 km

Guidance radar range—12 km (two fire, two missiles each)

USERS: USSR

EMPLOYMENT: All-weather system low to medium level air defense for motorized rifle and tank divisions.

NOTE: Susceptible to suppressive fires and ECM; exposed radar and wheels especially vulnerable to artillery fires.

SA-9 (GASKIN)



RECOGNITION FEATURES: Chassis is BRDM-2A, amphibious scout car; two twin launchers mounted on the sides of the turret; has infrared seeker and HE warhead.

ARMAMENT: 4 x SA-9 (GASKIN) missiles

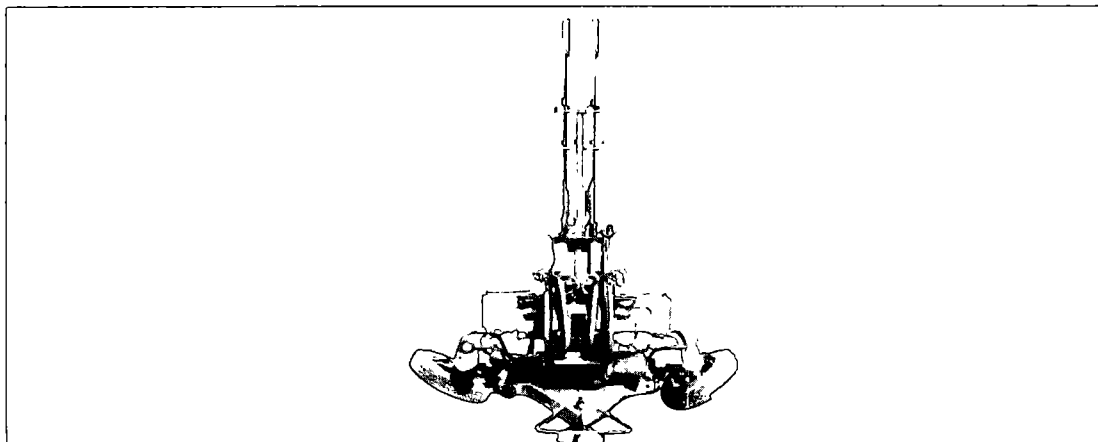
MISSILE RANGE: Horizontal—7,000 meters
Vertical—20-25,000 meters

EFFECTIVE RANGE: Approaching targets—4,000 meters
Targets flying off—1,000 meters

USERS: USSR, Poland

EMPLOYMENT: In air defense company of tank and motorized rifle regiment together with ZSU-23-4; shortrange, low altitude air defense. Designed to replace the ZPU-4 in the antiaircraft battery of motorized rifle and tank regiments.

ZU-23 (2 x 23mm Antiaircraft Gun)



RECOGNITION FEATURES: Two-wheeled mount with 2 x 23mm antiaircraft guns; also mounts antiaircraft sights and ammunition cans.

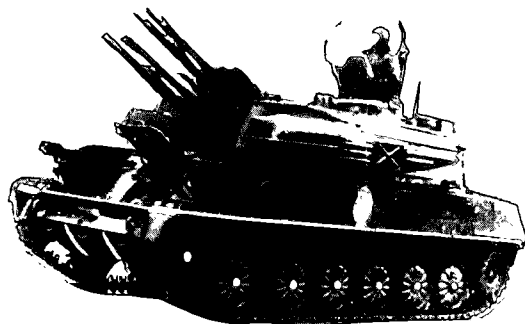
ARMAMENT: 2 x 23mm antiaircraft cannon

GUN RANGE: Maximum vertical—5,100 meters
Effective antiaircraft—2,500 meters

USERS: USSR, Warsaw Pact

EMPLOYMENT: Light antiaircraft; found in motorized rifle division; may be replacing ZPU-4.

ZSU-23-4(Antiaircraft) SELF-PROPELLED



RECOGNITION FEATURES: Full-tracked, six-roadwheeled vehicle, with modified PT-76 chassis; high, box-like hull with a rectangular turret centered over the third roadwheel; turret mounts 4 x 23mm automatic antiaircraft guns; prominently displayed radar dish.

ARMAMENT: 4 x 23mm antiaircraft cannon

TACTICAL ANTIAIRCRAFT RANGE: 3,000 meters

SPEED: 50 km/hr

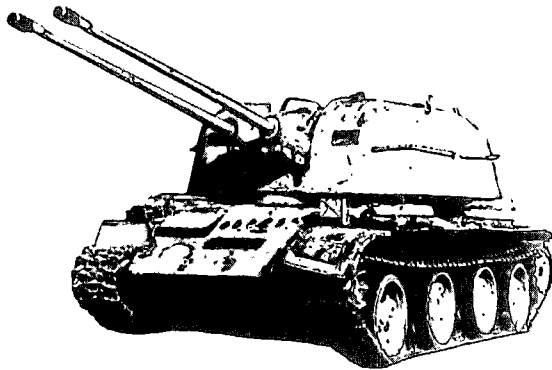
RANGE: 450 km

USERS: USSR, numerous

EMPLOYMENT: Batteries organic to motorized rifle and tank regiments. May be teamed with SA-9; employed in pairs about 200 meters apart, and 400 meters behind battalion's leading elements; acquires and tracks low flying targets.

NOTE: Heavy machinegun fire can penetrate hull and turret. Tread and roadwheels vulnerable to artillery. HE fragmentation can penetrate armor, destroy radar dish or rupture liquid coolant sleeves of 23mm cannon. System also vulnerable to ECM.

ZSU-57-2 (Antiaircraft) SELF-PROPELLED



RECOGNITION FEATURES: Full-tracked; four-roadwheeled; flat hull; mounting a bowl-type open-topped turret with two 57mm antiaircraft cannons.

ARMAMENT: 2 x 57mm cannon

TACTICAL ANTIAIRCRAFT RANGE: 4,000 meters

SPEED: 50 km/hr (carrier)

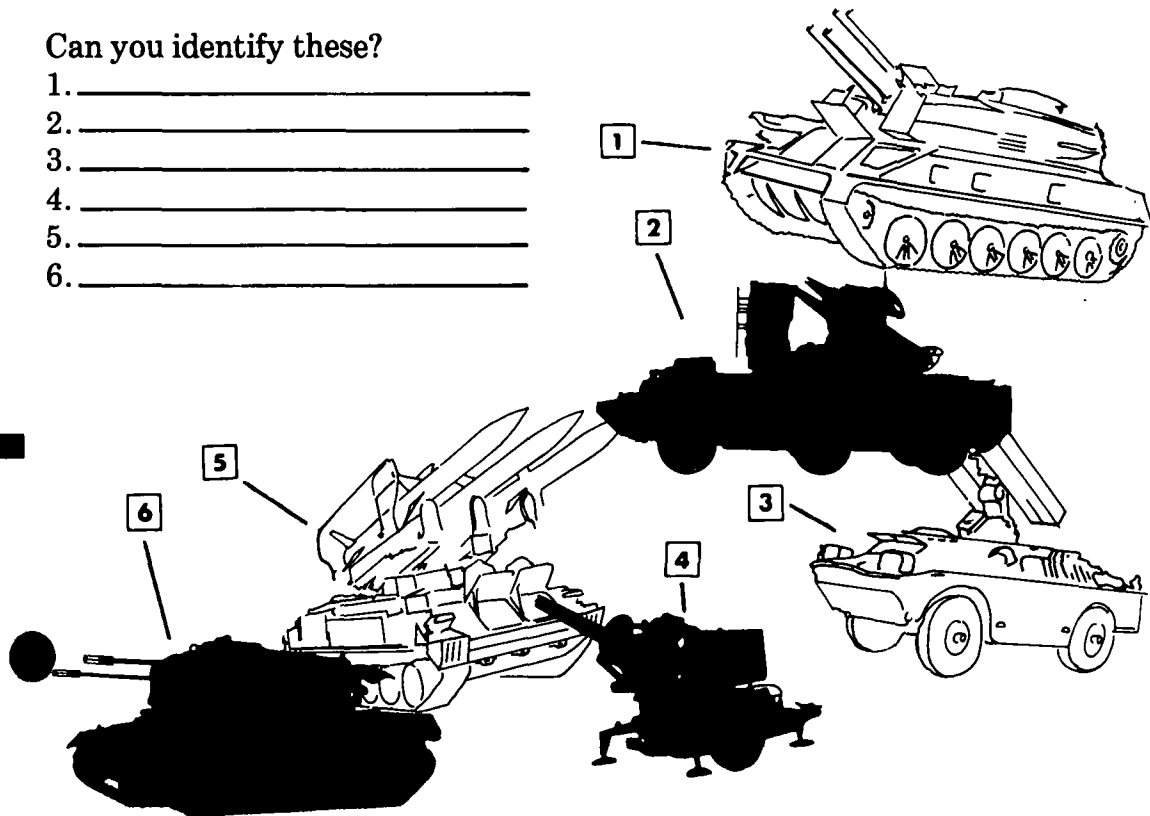
RANGE: 402 km

USERS: USSR, various

EMPLOYMENT: Follows closely behind advancing tanks and armored personnel carriers in a direct fire mode

Can you identify these?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____



ARMOR

CHIEFTAIN-----	146	
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MERKAVA -----	169	MTU -----192
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- All modern Soviet medium battle tanks—
- Have the capacity to lay smoke through their exhaust systems.
 - Can snorkel or deep-wade to depths of 5 meters.
 - Most distinctive feature is the overturned, cup-shaped turret.

CONSIDERATIONS IN DETERMINING AIMING POINTS ON ARMOR

A. *Armor Protection.* Armoring any vehicle is always a compromise providing greater protection in certain locations than in others. Customarily, the greatest protection is on the front of the hull and turret protecting the tank's weapon system; the least protection is on the rear, sides, top, and undercarriage. For air-delivered weapons, the *rear, sides, top, and undercarriage* (being the least protected armor areas) are the easiest to penetrate.

B. *Engine Compartment.* The engine compartment is one of the most vulnerable areas. Remember that this area has the least protection, and is the most easily penetrated. Damage to the engine will convert a mobile tank to a stationary pillbox much easier to destroy.

C. *Suspension System.* This is a susceptible area for attack and *may* immobilize a tank; but this is a chancy target and should not be engaged if rear, sides, or top are available.

D. *Fuel System.* Many foreign tanks will use both internal and external auxiliary fuel tanks. Auxiliary tanks (about 55-gallon drum size) are mounted on the sides or rear of the tank and are usually jettisoned upon contact with the enemy. However, they are ideal aiming points for a

surprise attack. Internal tanks are located in the engine compartment and around the driver's compartment. As an example, the T-62 can be completely destroyed by left flanking shots that hit fuel cells and ignite both fuel and ammunition. Flanking hits have an excellent chance of hitting both external fuel cells and stowed ammunition.

E. *Weapon System.* This is the most difficult to destroy of all the vulnerable areas on a tank. If the crew is blinded by smoke and the tank is practically disabled, the chances of success are greatly increased. *Remember that this is the most heavily armored area and also the most dangerous to face.*

F. *Assault Guns and Lightly Armored Vehicles.* Assault guns are armored much like tanks (heavy in front, light on sides), except that the crew compartment may or may not be open top. *Flanking fire is the most desired and effective.* Personnel carriers have light armor and may be attacked with antitank weapons. *Frontal attacks should be directed at the center front of the vehicle. Flank attacks should be directed at the hull just above the top of the tracks or wheels. Small arms fire may be directed against tires on wheeled APCs.*

EXAMPLES OF WARSAW PACT DESIGNATION CODE

T - Tank

Z - ADA

SU - Self-propelled

BTR - APC

A - Airborne

SA - AD Missile

P - Amphibious

A - Armored; first number indicates vehicle design number or caliber of main armament; the second number indicates number of guns.

B - Mounts turret

U - Command vehicle

Examples:

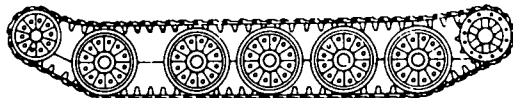
***ZSU-23-4* = A self-propelled air defense gun system with four 23mm guns.**

***BTR-60-PB* = The 60th APC design which is amphibious and mounts a turret.**

***PT-76* = Amphibious tank with 76mm main gun.**

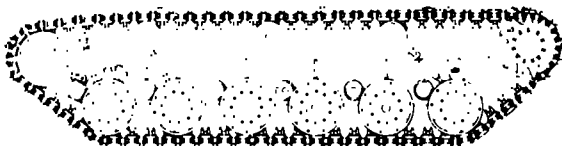
SOME BASIC VEHICLE DESIGN FEATURES CHARACTERISTIC OF NATO AND THE WARSAW PACT

1. Soviet tanks are mostly Christie suspension.



Characteristic of most
Warsaw Pact vehicles

2. NATO tanks are mostly torsion bar.



Characteristic of most
Allied vehicles

3. Soviet tanks have round searchlights, their hatches open forward, and do not have cupolas.
4. All US main battle tanks have prominent cupolas.

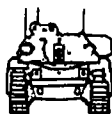
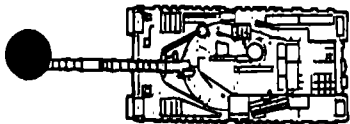
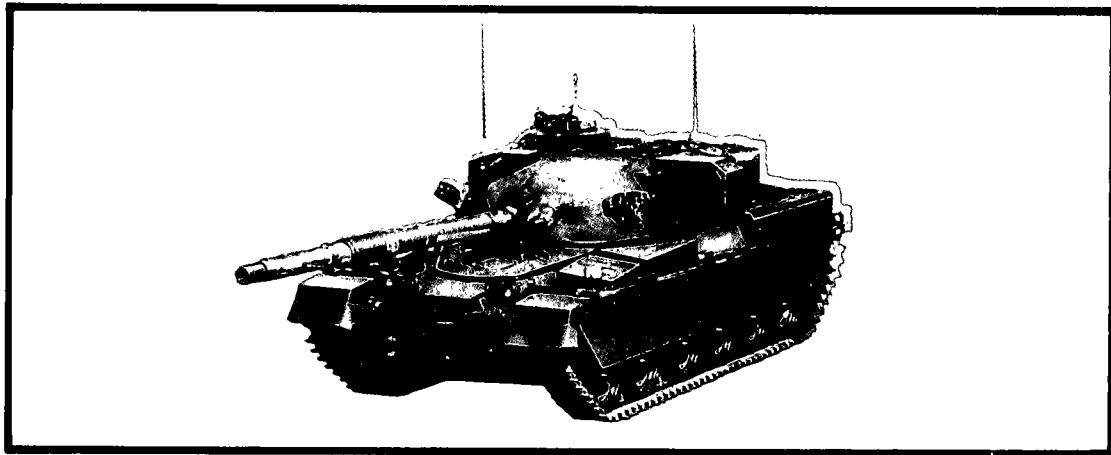
BATTLE FORMATION AND TARGET ACQUISITION

Within the first echelon (wave) of an attacking Warsaw Pact Force you will normally see the PT-76 first, then the main battle tanks intermixed with infantry riding in APCs such as BMP, BTRs, or mixed. Immediately behind the armor and infantry forces will be the artillery and air defense weapons.

What target do you engage first? This depends upon the degree of threat presented. Generally, the target having the longest effective range should be engaged first. For example, the BMP mounts the SAGGER with effective range to 3,000 meters and the main gun (73mm) with an effective range of 800 meters. If you see tanks and BMPs at a range of 2,500 meters, and are not facing an immediate threat yourself, you would want to shoot the BMP first because of its longer effective range. As the tanks move closer, within 1,500 meters approximately, their greater accuracy and faster rate of fire makes them a greater threat and should be engaged accordingly.



Chieftain Medium Tank



ARMOR

RECOGNITION FEATURES: Fully tracked; six-roadwheeled (usually not visible due to armored track skirt); flat, low-silhouetted hull with large oval turret longitudinally centered over fourth roadwheel; huge main gun with thermal dispensing covers; bore evacuator one-third the distance from muzzle; large searchlight built into left side of turret.

ARMAMENT: 1 x 120mm gun
1 x 12.7mm machinegun
2 x 7.62mm machinegun

MAIN GUN RANGE: 2,000 meters

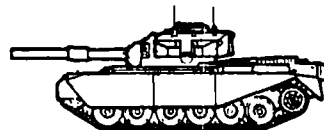
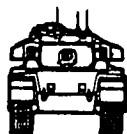
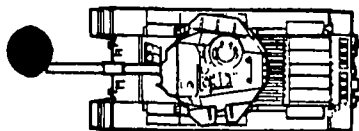
SPEED: 48 km/hr

RANGE: 400 km

USERS: Iran, Kuwait, United Kingdom

EMPLOYMENT: Main battle tank

Centurion MK 13 Medium Tank



ARMOR

RECOGNITION FEATURES: Fully tracked; six-roadwheeled; four support rollers covered by track skirts; low-silhouetted with turret mounted over third and fourth roadwheels; bore evacuator two-thirds from nozzle; stowage boxes around turret.

ARMAMENT: 1 x 105mm gun
1 x 12.7mm machinegun
1 x 7.62mm machinegun

MAIN GUN RANGE: 1,700 meters

SPEED: 35 km/hr

RANGE: 240 km

USERS: Australia, Canada, Denmark, India, Iraq, Israel, Jordan, Kuwait, Lebanon, Netherlands, South Africa, Sweden, Switzerland, United Arab Republic, United Kingdom

EMPLOYMENT: Employed as medium battle tank

Vickers Medium Tank, MARK 3



RECOGNITION FEATURES: Fully tracked; six-roadwheeled; track skirts used; bore evacuator halfway.

ARMAMENT: 1 x 105mm gun
2 x 7.62mm machinegun

MAIN GUN RANGE: 1,700 meters

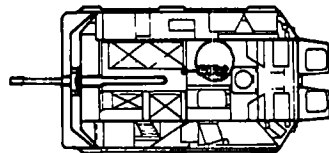
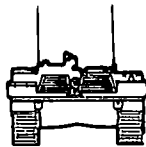
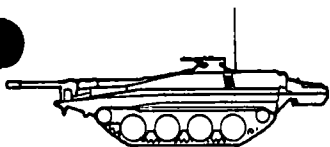
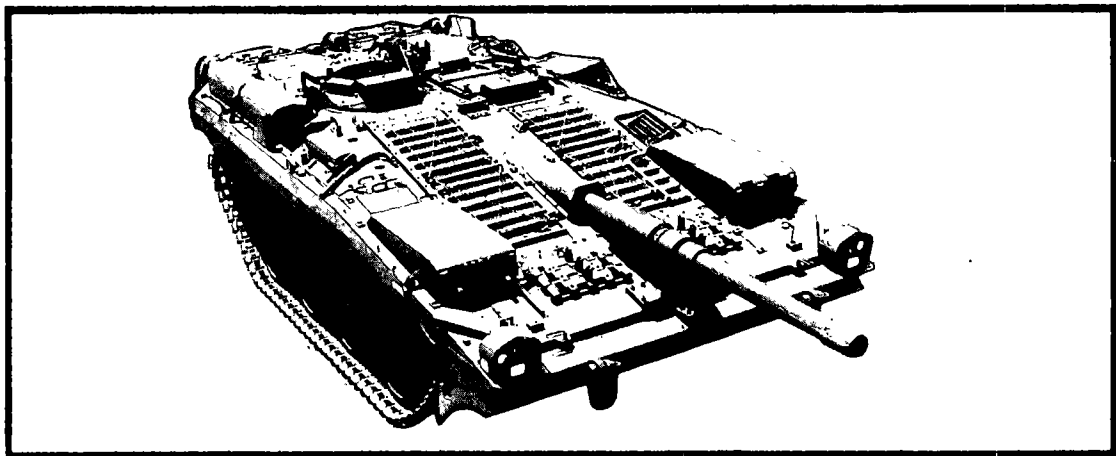
SPEED: 55 km/hr

RANGE: 675 km

USERS: India, Kuwait

EMPLOYMENT: Medium combat tank

STRV-103 Tank(S-Tank)



ARMOR

RECOGNITION FEATURES: Fully tracked; four-roadwheeled; long, sloping nose plate giving "wedge" appearance; no turret; gun controlled by pneumatic suspension; bore evacuator midway up barrel of main gun.

ARMAMENT: 1 x 105mm gun
2 x 7.62mm machinegun
1 x 7.62mm machinegun (antiaircraft)

MAIN GUN RANGE: 1,700 meters

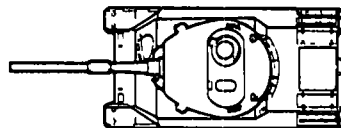
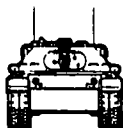
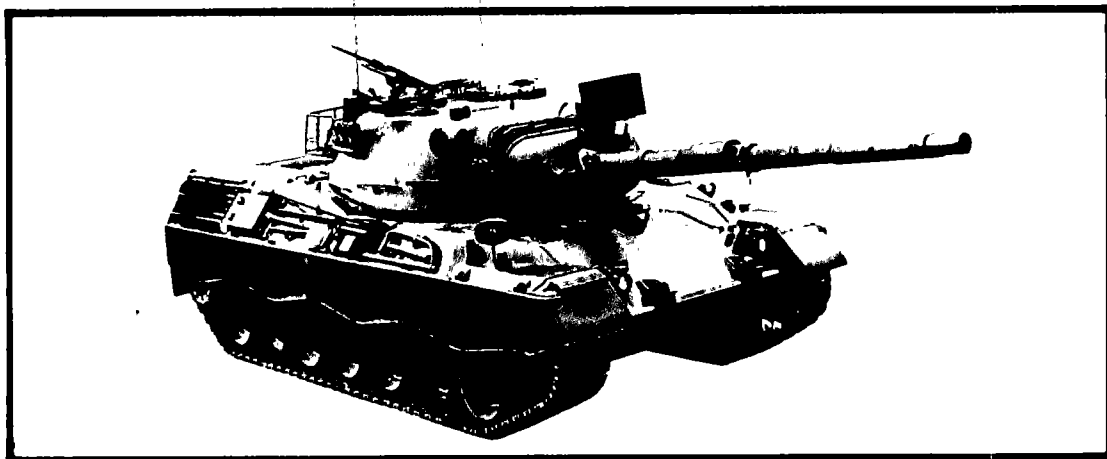
SPEED: 50 km/hr

RANGE: 400 km

USERS: Sweden

EMPLOYMENT: Main battle tank

LEOPARD 1, 1A1, and 1A2 Medium Tank



ARMOR

RECOGNITION FEATURES: Fully tracked; elongated cast turret mounted forward of center; seven-roadwheeled; track skirts cover four return rollers when all Leopard 1s have been modified; sloped-front armor; engine plate in rear angles up from turret; bore evacuator one-third up length of main gun; no muzzle brake; louvered exhaust grills on rear of hull sides.

ARMAMENT: 1 x 105mm gun
1 x 7.62mm machinegun (coaxial)
1 x 7.62mm machinegun (antiaircraft)

MAIN GUN RANGE: 1,700 meters

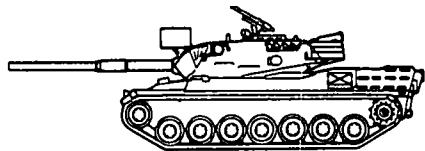
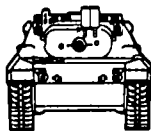
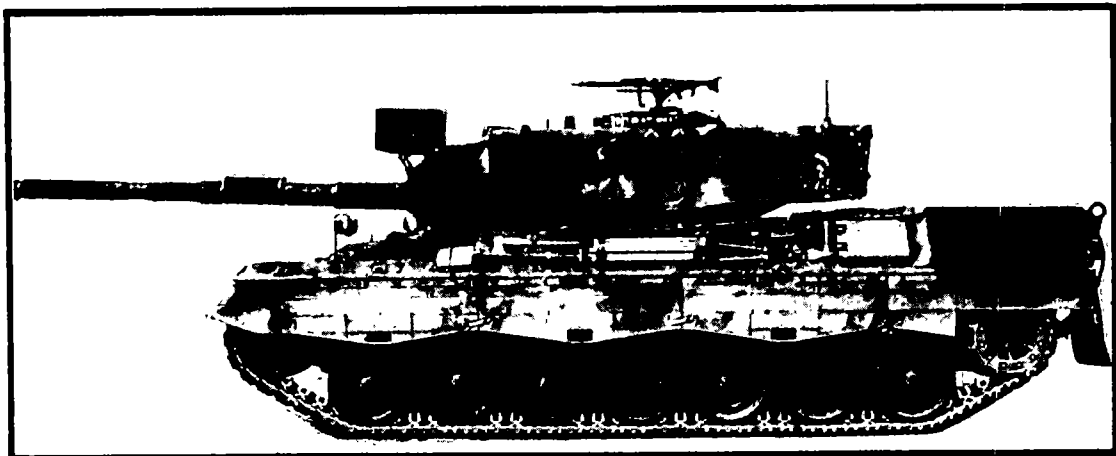
SPEED: 65 km/hr

RANGE: 500 km

USERS: Belgium, Canada, Italy, Netherlands, Norway, West Germany

EMPLOYMENT: Main battle tank

Leopard 1A3, and 1A4



RECOGNITION FEATURES: Same as Leopard 1 except scalloped track skirts and elongated welded angular turret.

ARMAMENT: 1 x 105mm gun
2 x 7.62mm machinegun

MAIN GUN RANGE: 1,700 meters

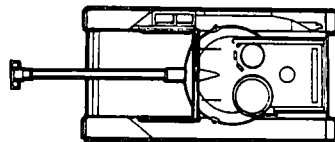
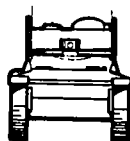
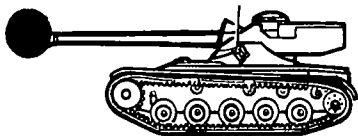
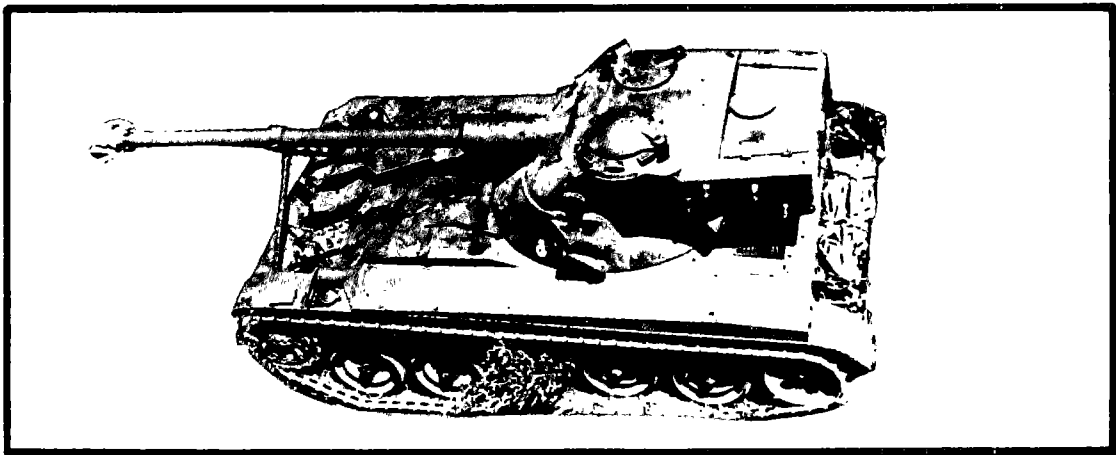
SPEED: 65 km/hr

RANGE: 600 km

USERS: Australia, Canada, Denmark, West Germany

EMPLOYMENT: Main battle tank

AMX 13 - Light Tank



ARMOR

RECOGNITION FEATURES: Five-roadwheeled, fully tracked chassis; steeply sloped front armor; low-silhouetted hull with flat-faced turret mounted over third and fourth roadwheels; turret hinged in center for elevating and depressing gun (oscillating turret); elongated turret with pronounced rear overhang; no bore evacuator.

ARMAMENT: 1 x 75mm main gun (90mm or 105mm optional)
1 x 7.62mm machinegun (coaxial)

MAIN GUN RANGE: 1,500 meters

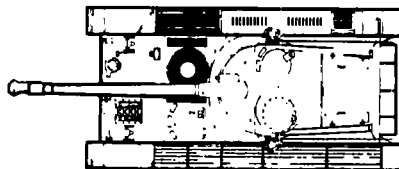
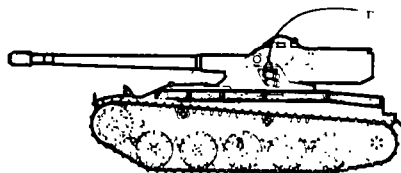
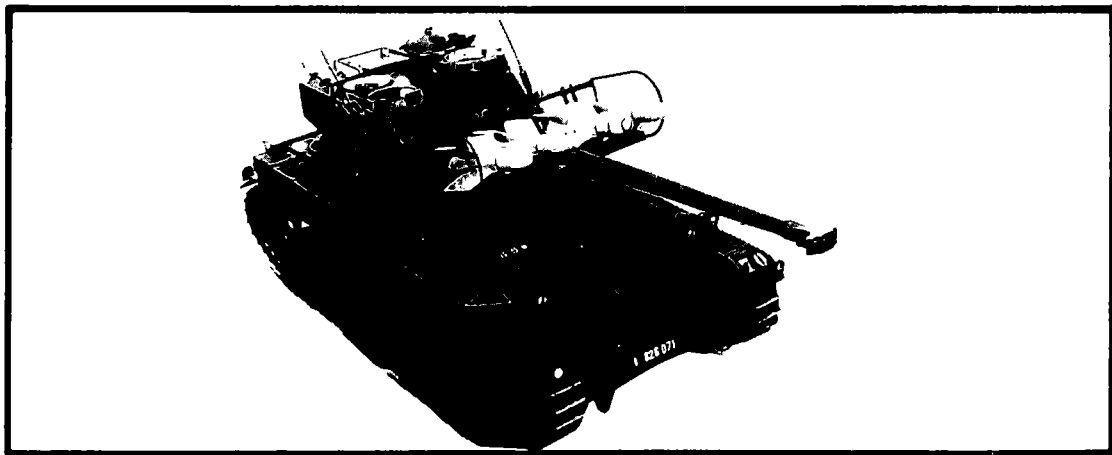
SPEED: 60 km/hr

RANGE: 350 km

USERS: Algeria, Argentina, Austria, Belgium, Cambodia, Dominican Republic, Ecuador, France, India, Indonesia, Ivory Coast, Lebanon, Morocco, Netherlands, Peru, Singapore, Switzerland, Tunisia, Venezuela

EMPLOYMENT: Medium battle tank

AMX 13 with SS-11 Missiles



RECOGNITION FEATURES: Five-roadwheeled; relatively large turret, rear of chassis; turret mounts main gun and various missile systems.

ARMAMENT: *1 x 75mm gun
 **SS-11 missiles

MAIN GUN RANGE: Gun—1,500 meters
 Missile—4,000 meters

SPEED: 60 km/hr

RANGE: 350 km

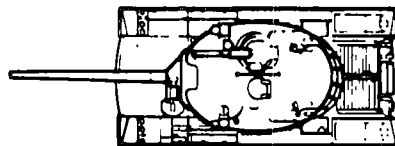
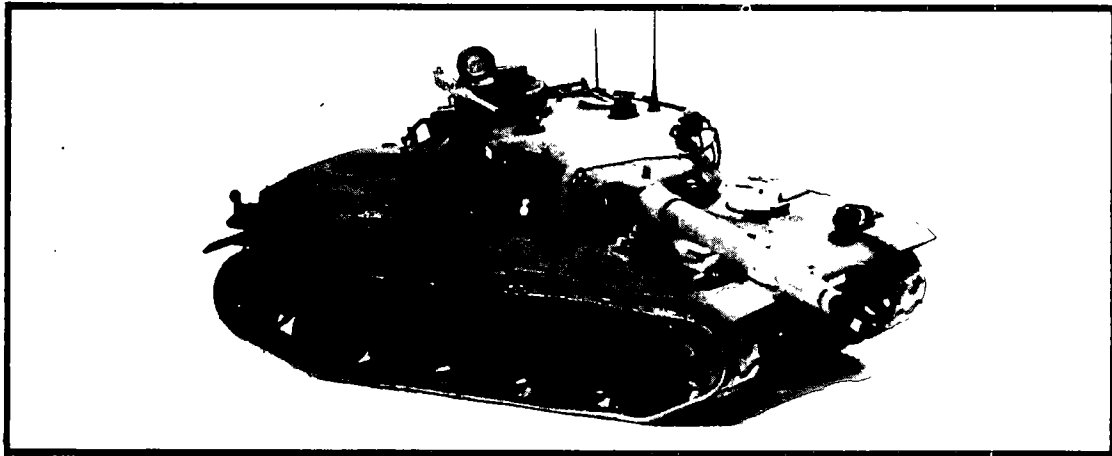
USERS: France

EMPLOYMENT: Light tank

*90mm gun is replacing the 75mm gun.

**Missile systems may include four Harpoon, four or six HOT, or four SS-11 total per vehicle.

AMX 30 Main Battle Tank



ARMOR

RECOGNITION FEATURES: Five-roadwheeled; low-silhouetted; gun tube has no muzzle brake or evacuator; has four-section aluminum heat shield; streamlined turret with smoke grenade dispenser; square infrared/white light searchlight left of main gun.

ARMAMENT: 1 x 155mm gun
1 x 12.7mm machinegun or 20mm cannon
1 x 7.62mm machinegun

MAIN GUN RANGE: 1,500 meters

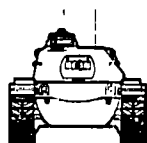
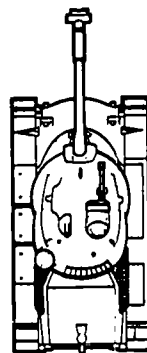
SPEED: 65 km/hr

RANGE: 600 km

USERS: France, Greece, Iraq, Libya, Peru, Saudi Arabia, Spain, Venezuela

EMPLOYMENT: Main battle tank

M-48 A3 Medium Tank



ARMAMENT: 1 x 90mm gun

1 x .30 caliber machinegun (coaxial)

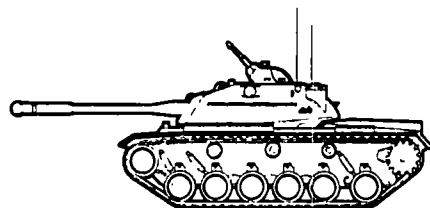
1 x .50 caliber machinegun in cupola

SPEED: 48 km/hr

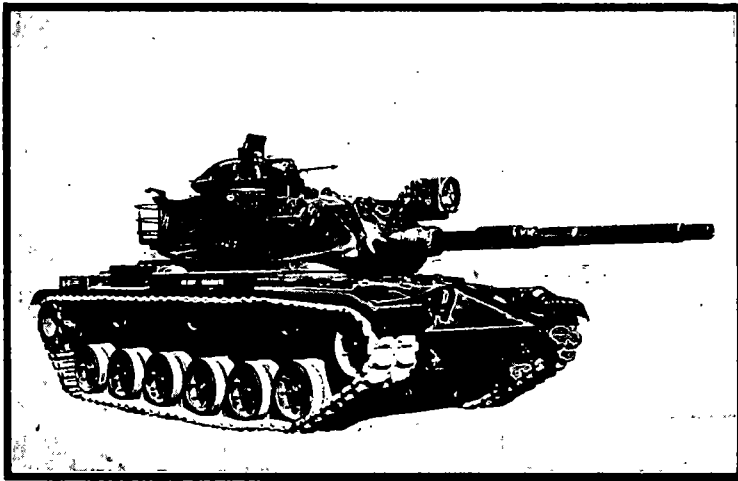
RANGE: 500 km

USERS: United States

ARMOR



M-60A1 Main Battle Tank

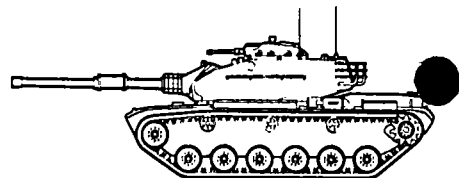
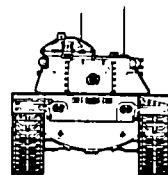


ARMAMENT: 1 x 105mm gun
1 x 7.62mm machinegun (coaxial)
1 x .50 caliber machinegun

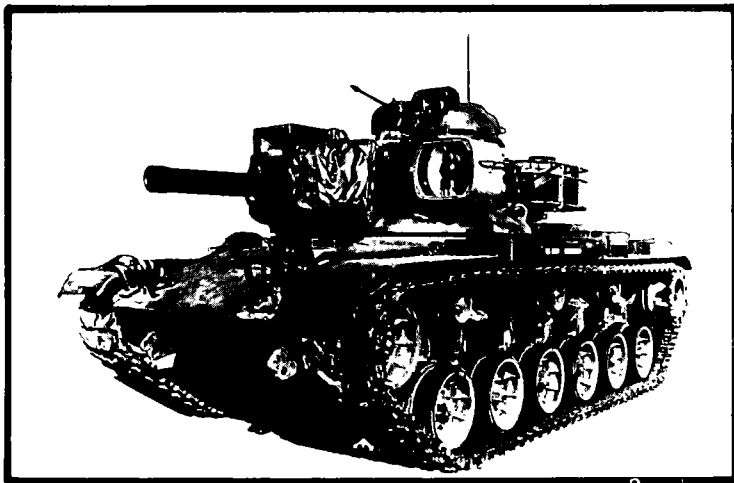
SPEED: 48 km/hr

RANGE: 500 km

USERS: Israel, United States



M-60A2 Main Battle Tank



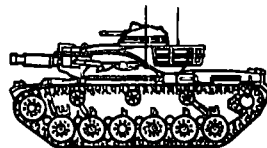
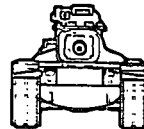
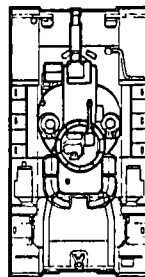
ARMAMENT: 1 x 152mm gun launcher
1 x 7.62mm machinegun (coaxial)
1 x .50 caliber machinegun

SPEED: 48 km/hr

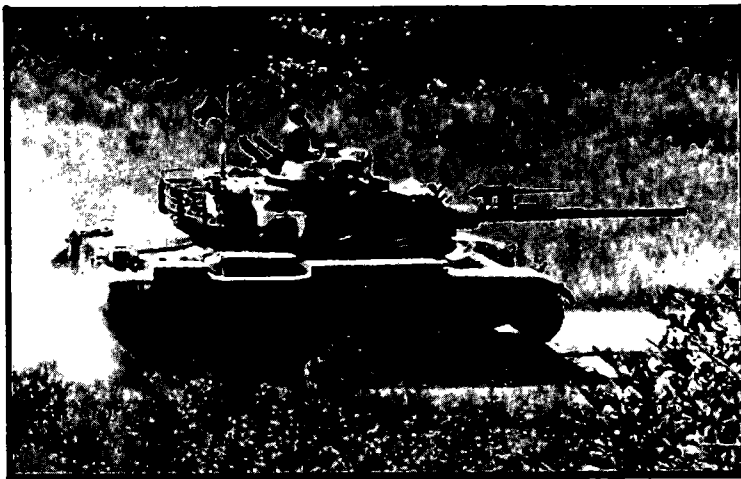
RANGE: 450 km

USERS: United States

ARMOR



M-60A3 Main Battle Tank



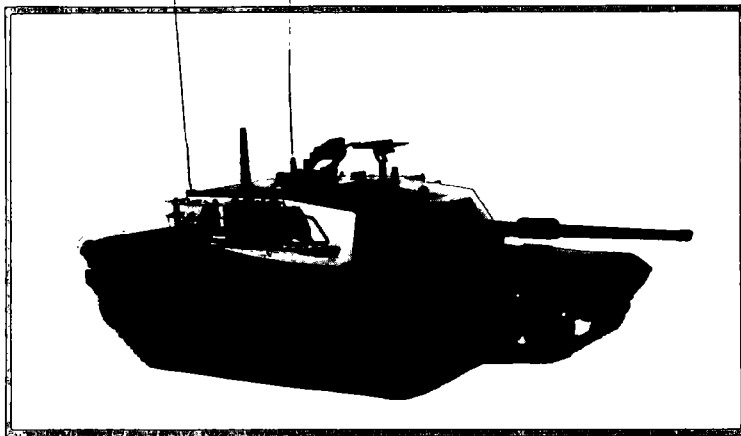
ARMAMENT: 1 x 105mm gun
1 x 7.62mm machinegun (coaxial)
1 x .50 caliber machinegun

SPEED: 48 km/hr

RANGE: 498 km

USERS: United States

XM1 Main Battle Tank



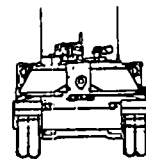
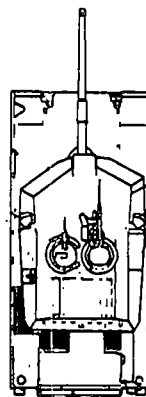
ARMAMENT: 1 x 105mm gun
2 x 7.62mm machineguns (one coaxial, one skate mounted)
1 x .50 caliber machinegun

SPEED: 72 km/hr on paved level surface
40 km/hr cross-country

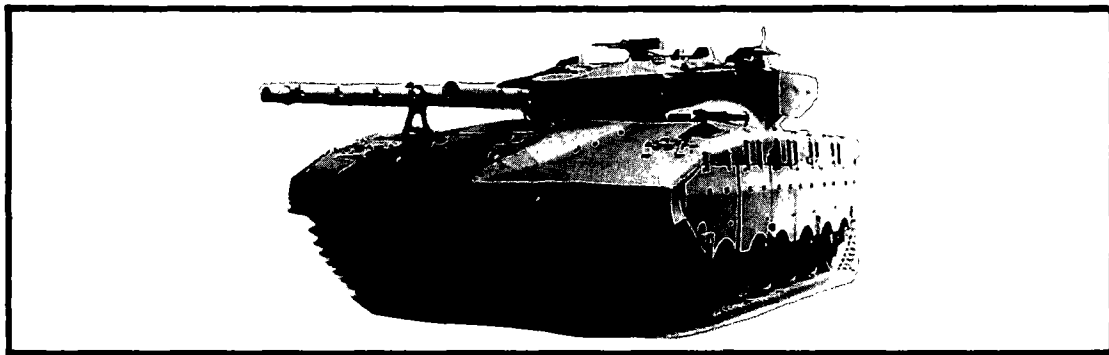
RANGE: 442 km at 40 km/hr

USERS: United States

ARMOR



Merkava (Chariot) MX1



RECOGNITION FEATURES: Six-roadwheeled; linked in pairs to suspension units for high mobility; engine forward of fighting compartment, offset to right; thick-walled, single-cast hull; narrow turret mounted well back; cast components; rear door loading capability.

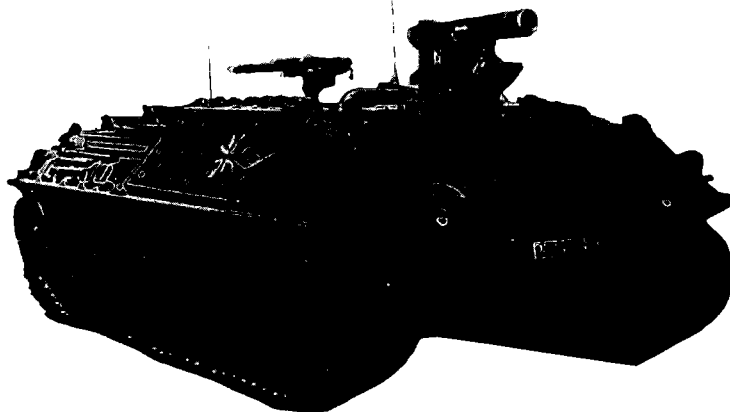
ARMAMENT: 1 x 105mm gun (can accommodate larger weapon)
1 x 7.62mm machinegun (coaxial)
1 x 7.62mm machinegun on commander's cupola

MAIN GUN RANGE: 1,700 meters

USERS: Israel

EMPLOYMENT: Main battle tank

Jaguar 1 and 2, ATGM Tank Destroyers



RECOGNITION FEATURES: Fully tracked; five roadwheels; two-staged hull; antitank missile launcher mounted on hull roof.

ARMAMENT: ATGM system (Jaguar 1, HOT: Jaguar 2, TOW).

MAIN GUN RANGE: HOT—4,000 meters
TOW—3,500 meters

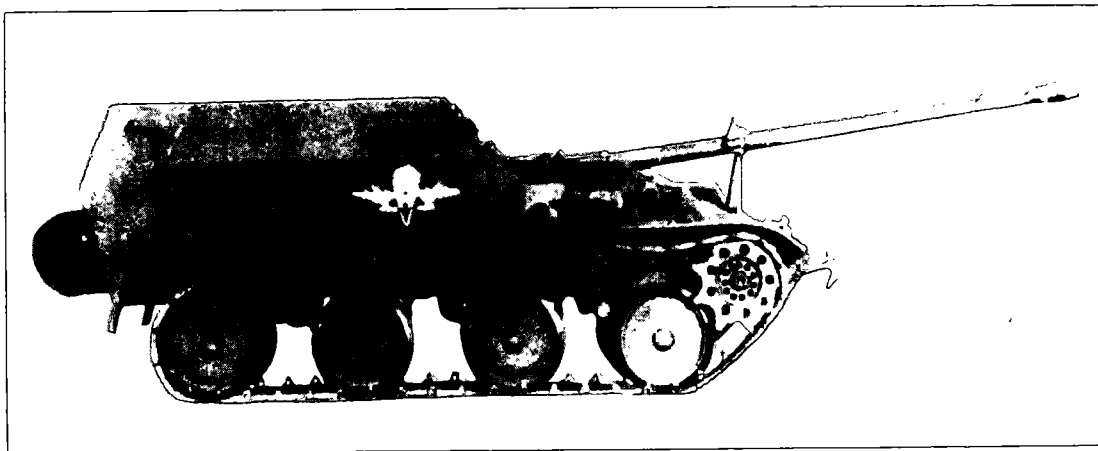
SPEED: 70 km/hr

RANGE: 400 km

USERS: West Germany

EMPLOYMENT: Tank destroyer held in separate companies in combat brigades.

ASU-57 Airborne Assault Gun, Self-Propelled



RECOGNITION FEATURES: Fully tracked; four-roadwheeled; two-level hull, with front faces sloping; no turret mounted; gun projecting from front face of super structure; guncrew area has no top cover; long gun barrel.

ARMAMENT: 1 x 57mm antitank gun

MAIN GUN RANGE: 1,000 meters

SLOPE ASCENDING CAPABILITY: 30 degrees/50 percent

SPEED: 45 km/hr

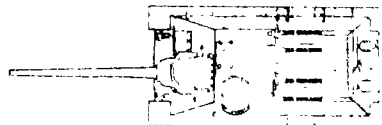
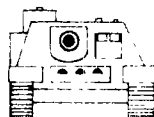
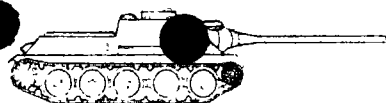
FORDING CAPABILITY: 2 feet, 4 inches

RANGE: 260 km

USERS: Middle East, USSR, Warsaw Pact

EMPLOYMENT: Airborne assault vehicle

SU-100 Assault Gun



ARMOR

RECOGNITION FEATURES: Fully tracked; five-roadwheeled; box-shaped (square) housing, front of vehicle, around gun; engine in rear, covered by plating lower in silhouette than front; long barrel on main gun.

ARMAMENT: 1 x 100mm gun

MAIN GUN RANGE: 1,500 meters

SLOPE ASCENDING CAPABILITY: 30 degrees/50 percent

SPEED: 55 km/hr

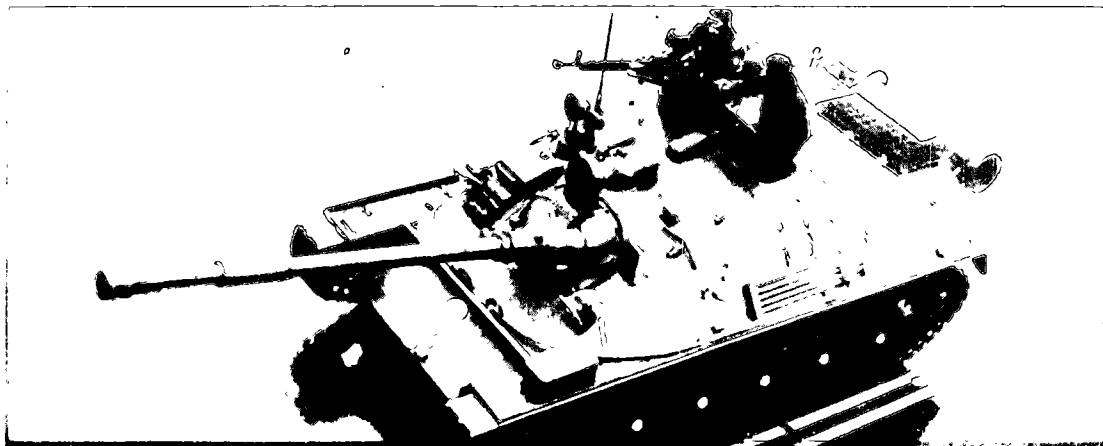
FORDING CAPABILITY: 4 feet, 2 inches

RANGE: 300 km

USERS: Middle East, USSR, Warsaw Pact

EMPLOYMENT: Assault gun used with mechanized infantry

ASU-85 Airborne Assault Gun, Self-Propelled



RECOGNITION FEATURES: Fully tracked; six-roadwheeled with space between first, second; box-shaped with covered crew area; main gun projecting from front slope; muzzle brake attached with bore evacuator near muzzle.

ARMAMENT: 1 x 85mm gun
1 x 7.62mm machinegun (coaxial)

MAIN GUN RANGE: 1,500 meters

SLOPE ASCENDING CAPABILITY: 38 degrees/62 percent

SPEED: 45 km/hr

FORDING CAPABILITY: 4 feet, 3 inches

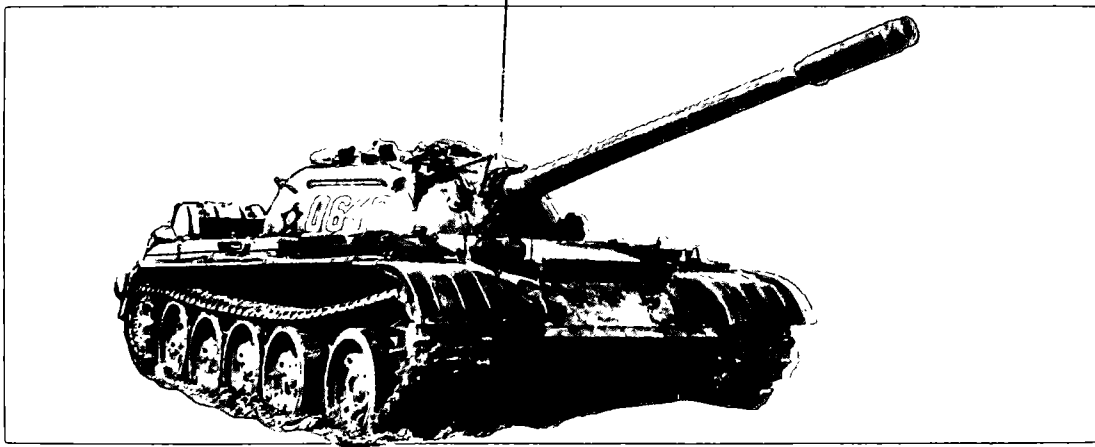
RANGE: 260 km

USERS: East Germany, Poland, USSR

EMPLOYMENT: Airborne assault vehicle; antitank

NOTE: The ASU-85 has thin armor; the front plate is only 40mm thick and the upper hull side is 15mm.

T-54/T-55/Type 59 Medium Tank



RECOGNITION FEATURES: Fully tracked; five-roadwheeled; no support rollers; space between first and second roadwheels; low-silhouetted, sloped hull; dome-shaped turret mounted over third roadwheel; bore evacuator at muzzle; infrared headlights; infrared searchlight for gun; seven variations of this model exist. *

ARMAMENT: 1 x 100mm gun
1 x 7.62mm machinegun
1 x 12.7mm antiaircraft machinegun

MAIN GUN RANGE: 1,500 meters

SLOPE ASCENDING CAPABILITY: 30 degrees/50 percent

SPEED: 50 km/hr

FORDING CAPABILITY: 4 feet, 7 inches (18-foot snorkel)

RANGE: 500 km

USERS: India, Israel (with 105mm gun), People's Republic of China (Type 59), Middle East, USSR, Warsaw Pact

EMPLOYMENT: Medium battle tank in armored formations

*Not all T-55s mount the turret roof 12.7mm machinegun.

T-62 Medium Tank*



*All Soviet medium battle tanks have capability to lay smoke through exhaust system; and snorkel or deep-wade to a maximum depth of 5 meters. Not all T-62s mount the turret roof 12.7mm machinegun. Most vulnerable point on T-62 is left flank.

RECOGNITION FEATURES: Fully tracked; five-roadwheeled; no support rollers; flat, low-silhouetted hull; overturned, cup-shaped turret over third roadwheel; no muzzle brake; bore evacuator one-third to muzzle; greater spacing between third, fourth, and fifth roadwheels.

ARMAMENT: 1 x 115mm main gun (smooth bore, very high muzzle velocity)
1 x 7.62mm machinegun (coaxial)
1 x 12.7mm antiaircraft machinegun*

MAIN GUN RANGE: 1,600 meters

SLOPE ASCENDING CAPABILITY: 30 degrees/50 percent

SPEED: 50 km/hr

FORDING CAPABILITY: 5.5m (18-foot snorkel)

RANGE: 450 km

USERS: Middle East, USSR, Warsaw Pact

EMPLOYMENT: Main battle tank (medium) in armored formations

PT-76 Reconnaissance Amphibious Tank



NOTE: PT-76 has no current night vision equipment or NBC protection for the three-man crew. PT-76 is vulnerable to .50 caliber machinegun fire.

RECOGNITION FEATURES: Fully tracked; six-roadwheeled; no support rollers; rectangular-shaped hull with a boat-like front, truncated cone turret chassis, also used for BTR-50P-series of vehicles; muzzle brake on main gun; bore evacuator close to muzzle; some older guns still mount a multi-baffle muzzle brake and no bore evacuator; lightly armored.

ARMAMENT: 1 x 76mm main gun
1 x 7.62mm machinegun (coaxial)
1 x 12.7mm machinegun (antiaircraft) (on some versions)

MAIN GUN RANGE: 650 meters

SLOPE ASCENDING CAPABILITY: 38 degrees/62 percent

SPEED: 44 km/hr—land
10 km/hr—water

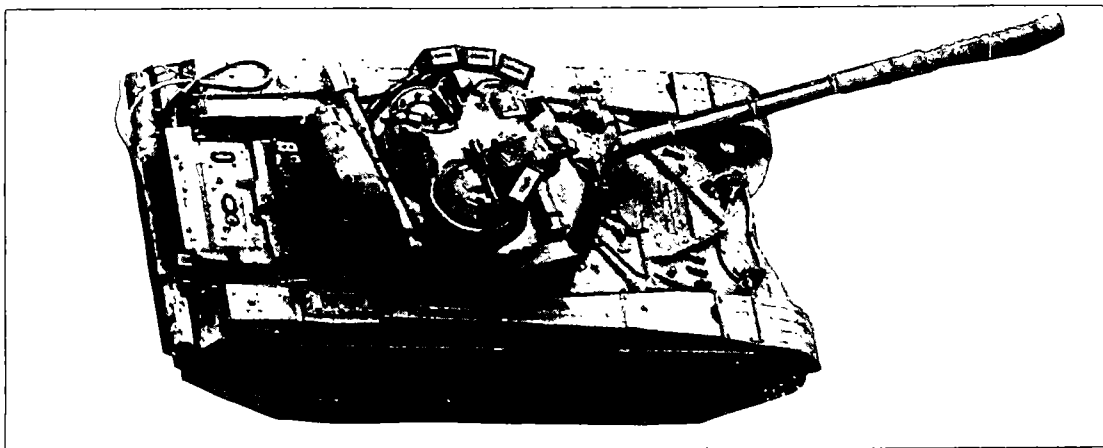
FORDING CAPABILITY: Amphibious

RANGE: 260 km

USERS: Afghanistan, Angola, Congo, Cuba, East Germany, Finland, India, Iraq, Israel, Laos, Middle East, North Korea, Pakistan, People's Republic of China, USSR, Vietnam, Warsaw Pact

EMPLOYMENT: Amphibious reconnaissance tank

T-64 Medium Tank



RECOGNITION FEATURES: T-64 and T-72 are similar; however, T-64 has six small stamped roadwheels. T-72 has six large, die-cast roadwheels. Infrared light is on left of main gun on T-64; on T-72, it is on right of main gun. 12.7mm machinegun can be fired from inside turret of T-64; on T-72, it is fired from open hatch. Exhaust vents at rear of T-64; vents on rear deck of T-72. New snorkel carried on back of turret on T-64; T-62-type snorkel carried on left rear of T-72 turret. Three equal-size storage boxes on left of turret; two unequal-size storage boxes on right of turret.

ARMAMENT: 1 x 125mm smooth bore
1 x 12.7mm antiaircraft machinegun (turret roof-mounted)
1 x 7.62mm machinegun (coaxial)

SPEED: 2,000 meters (approximately)
60 to 70 km/hr

RANGE: 500 km (approximately)

USERS: USSR

EMPLOYMENT: Main battle tank in armored formations

T-72 Medium Tank



RECOGNITION FEATURES: T-72 is similar in design to T-64 viewed from the top, particularly turret and armament design. Engine compartment design is similar to T-62; six roadwheels; snorkel carried on left side of turret toward rear; engine grill at rear of hull. Stowage between right and rear of turret only, track support rollers.

ARMAMENT: 1 x 125mm main gun
1 x 12.7mm antiaircraft machinegun (turret roof-mounted)
1 x 7.62mm machinegun (coaxial)

MAIN GUN RANGE: 2,000 meters (approximately)

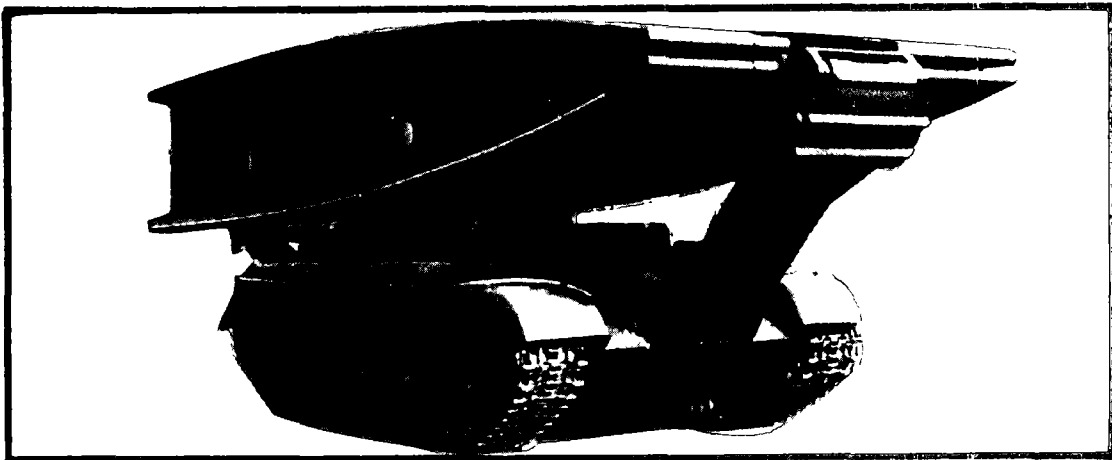
SPEED: 55 km/hr

RANGE: 500 km (approximately)

USERS: USSR, Warsaw Pact (some)

EMPLOYMENT: Main battle tank in armored formations

East German Tank-Launched Scissors Bridge BLG-60



RECOGNITION FEATURES: T-54/55 tank chassis; 21.6 meter scissors bridge with 50-ton capacity; bridge width, 3.2 meters; box girder treadways. Similar in appearance to Czechoslovak MT-55 (span of BLG-60 is 3 meters longer); may be equipped with snorkel for deep fording and infrared night vision device for bridgelaying at night.

SPEED: 50 km/hr

RANGE: 500 km/hr

USERS: Czechoslovakia (MT-55), East Germany, Poland

EMPLOYMENT: Associated with tank units

Mine Roller/Plow Combination T-54/KMT-5M



RECOGNITION FEATURES: T-54 medium tank with KMT-5 mine clearing equipment.

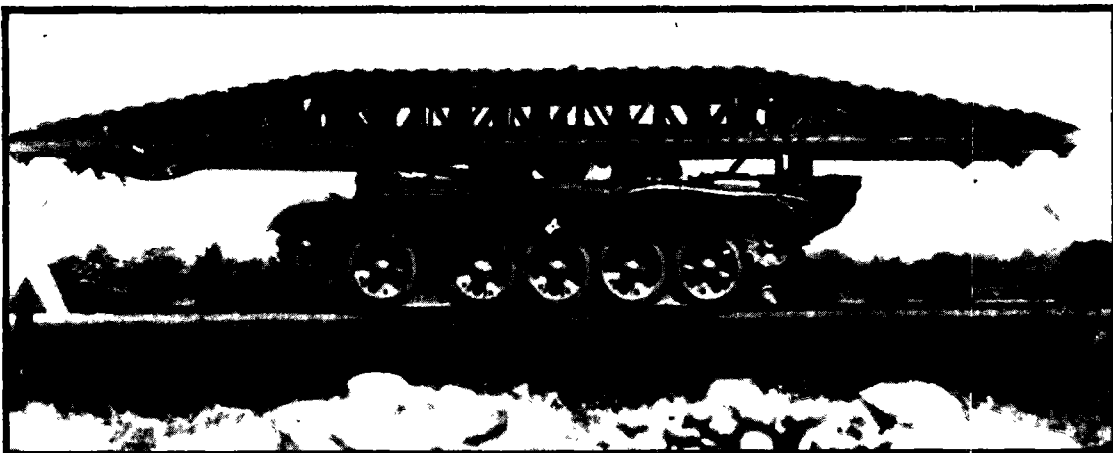
SPEED: 50 km/hr

RANGE: 500 km

USERS: USSR

EMPLOYMENT: Mine clearing

Soviet Tank-Launched Bridge MTU (T-54)



RECOGNITION FEATURES: T-54 chassis; 12-meter treadway bridge span MTU-1 with 50-ton capacity; hydraulically launched; bridge width, 3.2 meters. Most important Soviet bridgelaying tank. Takes 3 to 5 minutes to complete launching operation; waffle-like appearance.

ARMAMENT: 1 x 12.7mm antiaircraft machinegun

MAIN GUN RANGE: 2,000 meters

SPEED: 50 km/hr

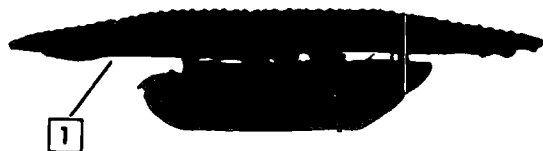
RANGE: 500 km

USERS: USSR, Warsaw Pact

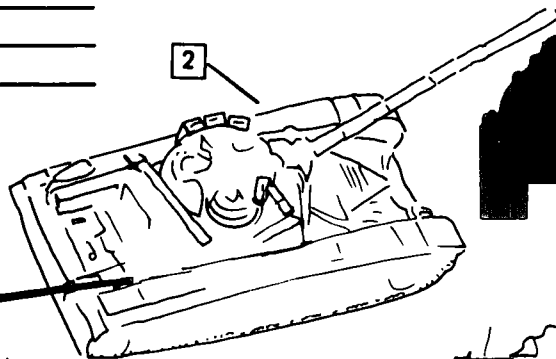
EMPLOYMENT: Associated with tank units

Can you identify these?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____



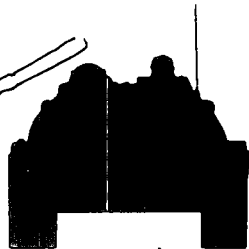
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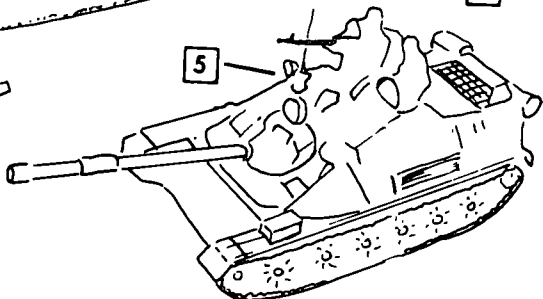
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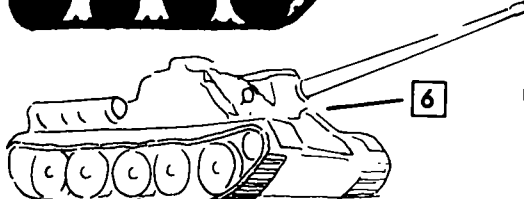
4



5



6



ARTILLERY

GCT-----	196		
MKF3-----	198		
ABBOT -----	200		
BANDKANON 1A-----	202	T-12/T-12A-----	218
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		BM-21 -----	246

155mm Self-Propelled Howitzer, GCT



RECOGNITION FEATURES: Howitzer mounted on AMX 30 chassis; large box-like turret; loading platform in rear lowered to horizontal when loading. Truck with ammunition backs up to ramp and loads ammunition racks.

ARMAMENT: 1 x 155mm howitzer

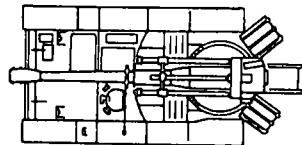
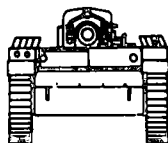
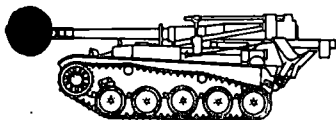
GUN RANGE: 20,000 meters (conventional ammunition)
30,500 meters (rocket assisted projectile)

SPEED: 65 km/hr (improved roads)

USERS: France

EMPLOYMENT: Direct support weapon

MKF3 155mm SP Howitzer



ARTILLERY

RECOGNITION FEATURES: Five roadwheels; slight tube (muzzle brake) overhang; driver and gunner in left front, forward of turret; rearward projection of magazines; double-baffle muzzle brake.

ARMAMENT: 1 x 155mm howitzer

GUN RANGE: 20,000 meters

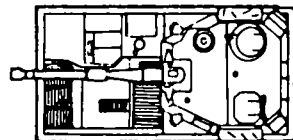
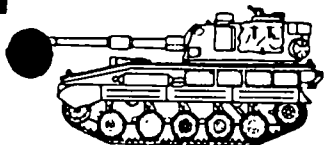
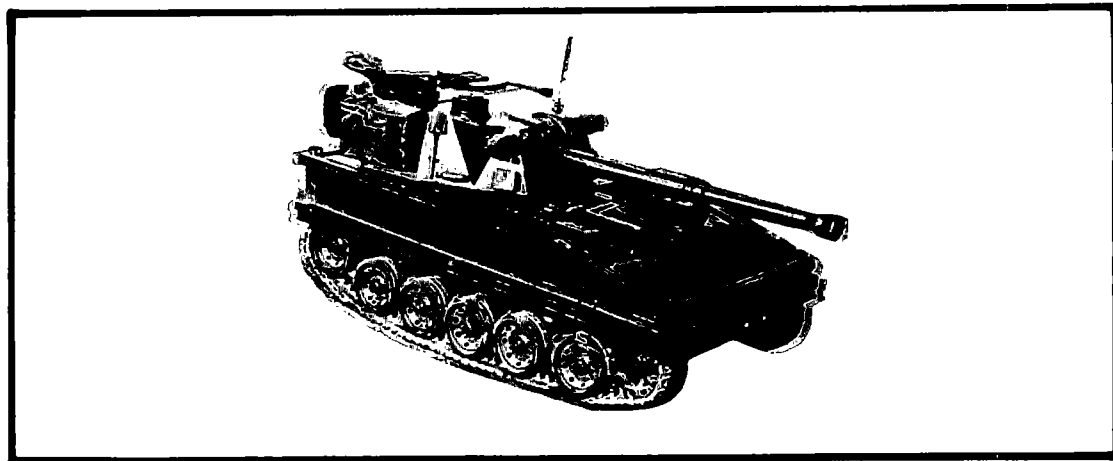
SPEED: 60 km/hr

RANGE: Classified

USERS: Argentina, France, Venezuela

EMPLOYMENT: General fire support for the mechanized divisions of the French Army

ABBOT 105mm Self-Propelled Howitzer



ARTILLERY

RECOGNITION FEATURES: Five roadwheels; box-like hull; rear-mounted turret, with slight tube (muzzle brake) overhang over leading edge of hull; driver in right front.

ARMAMENT: 1 x 105mm howitzer

GUN RANGE: 17,500 meters

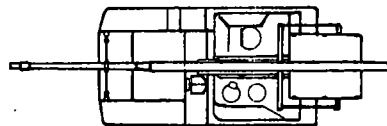
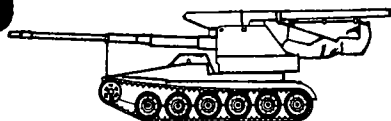
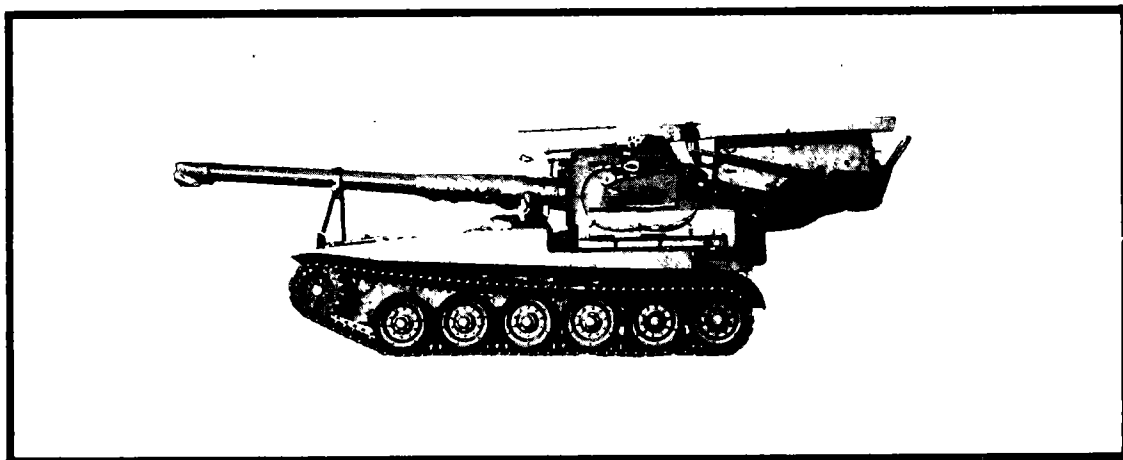
SPEED: 47 km/hr

RANGE: Classified

USERS: United Kingdom

EMPLOYMENT: Artillery battalions in direct support of brigades

BANDKANON 1A 155mm Self-Propelled Automatic Gun



ARTILLERY

RECOGNITION FEATURES: Six-roadwheeled; considerable tube overhang forward of leading edge of hull; prominent "A" frame tube travel strut; large rearward projection of magazine; small turret; driver on left side forward of turret near center.

ARMAMENT: 1 x 155mm gun

GUN RANGE: 25,000 meters

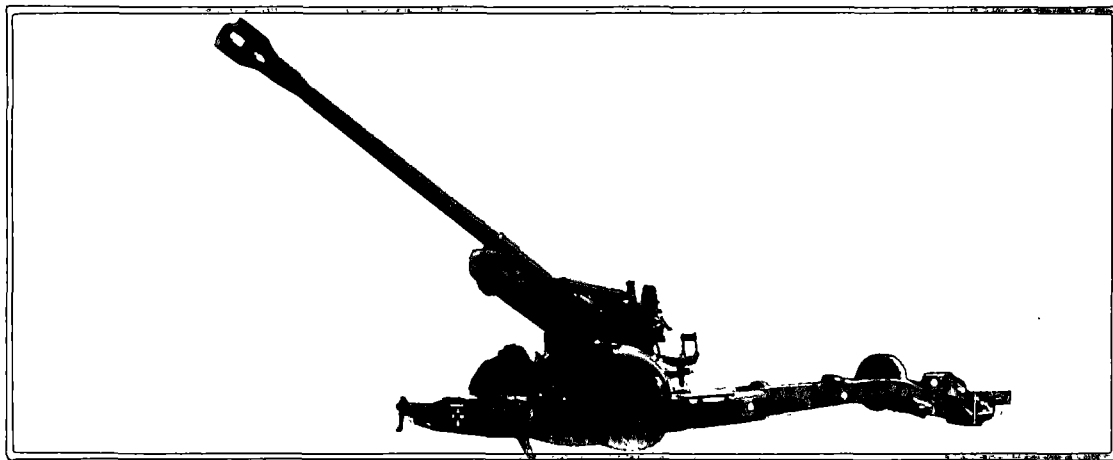
SPEED: 40 km/hr

RANGE: Classified

USERS: Sweden

EMPLOYMENT: Direct support artillery

155mm Auxiliary Propelled Field Howitzer, FH 70



RECOGNITION FEATURES: Auxiliary propulsion unit, double-baffle muzzle brake, driving wheels on trails, two seats for driver/gunner and assistant gunner/driver.

ARMAMENT: 1 x 155mm howitzer

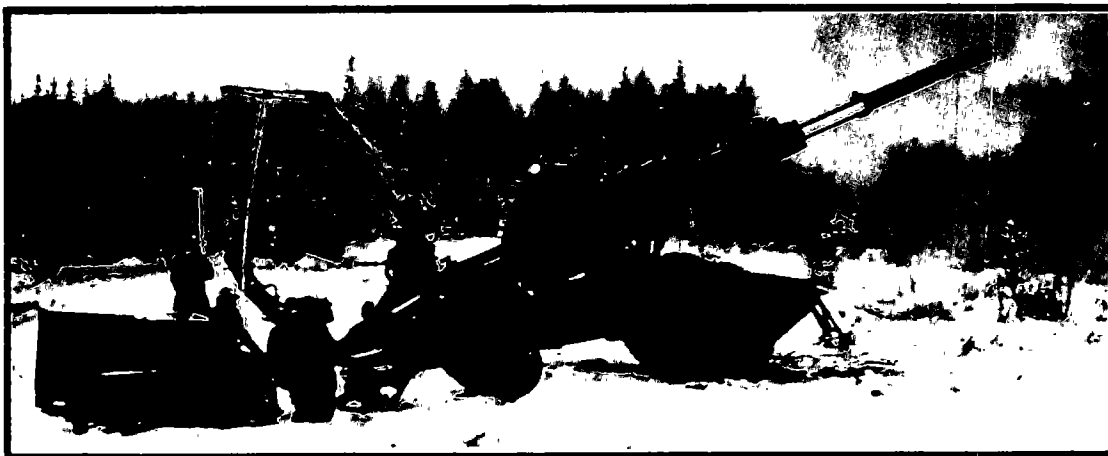
GUN RANGE: 24,000 meters (conventional ammunition)
30,000 meters (rocket assisted projectile)

SPEED: 80 km/hr (improved road)
12 km/hr (cross-country, APU mode)

USERS: Italy, United Kingdom, West Germany

EMPLOYMENT: Artillery battalions in direct support of regiments

155mm Auxiliary Propelled Field Howitzer, FH 77



RECOGNITION FEATURES: Auxiliary propulsion unit, "pepperpot" muzzle brake, wheels on trails, ammunition handling device on right rear of howitzer.

ARMAMENT: 1 x 155mm howitzer

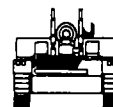
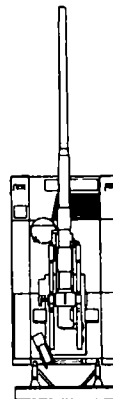
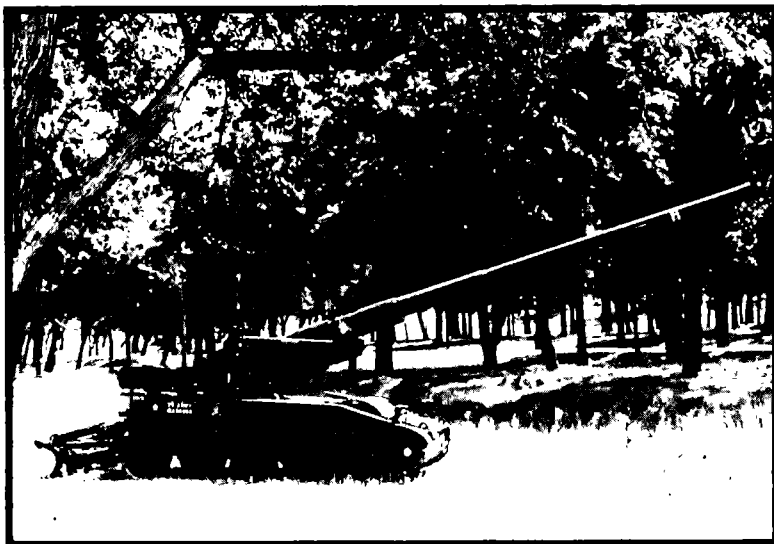
GUN RANGE: 20,000 meters

SPEED: 80 km/hr (improved roads)
10 km/hr (cross-country, APU mode)

USERS: Sweden

EMPLOYMENT: Brigade artillery level, twelve gun battalions, four per battery

M107 175mm SP Gun



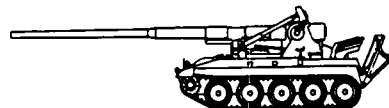
ARMAMENT: 1 x 175mm

GUN RANGE: 32,700 meters

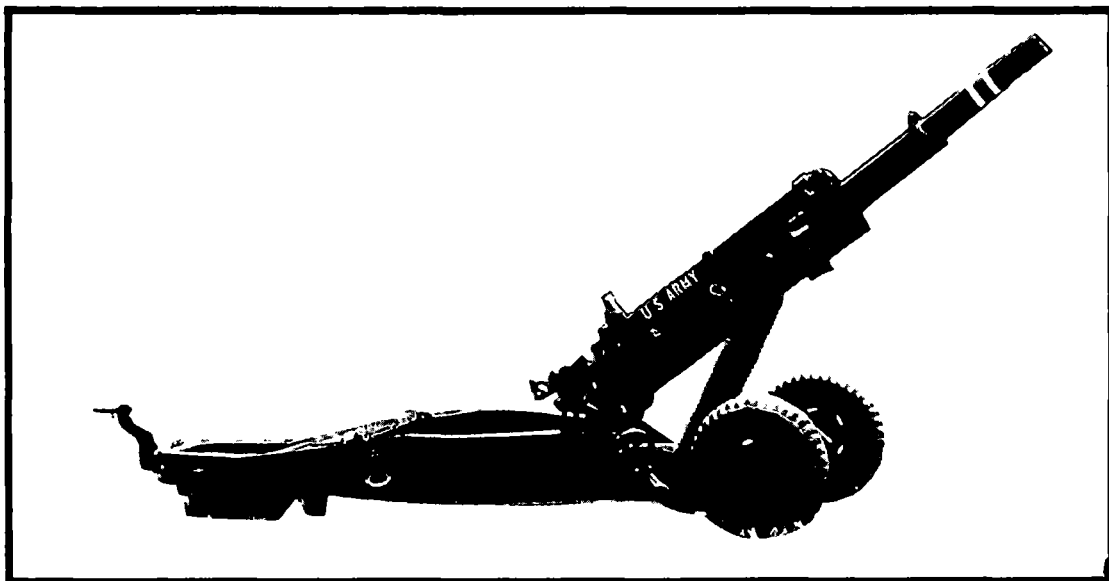
RANGE: 724 km

USERS: Greece, Iran, Israel, Netherlands, Spain, United Kingdom, United States, West Germany

ARTILLERY



M102 105mm Light Howitzer



ARMAMENT: 1 x 105mm howitzer

RANGE: 11,500 meters

USERS: United States

M114A1 155mm Howitzer, Towed



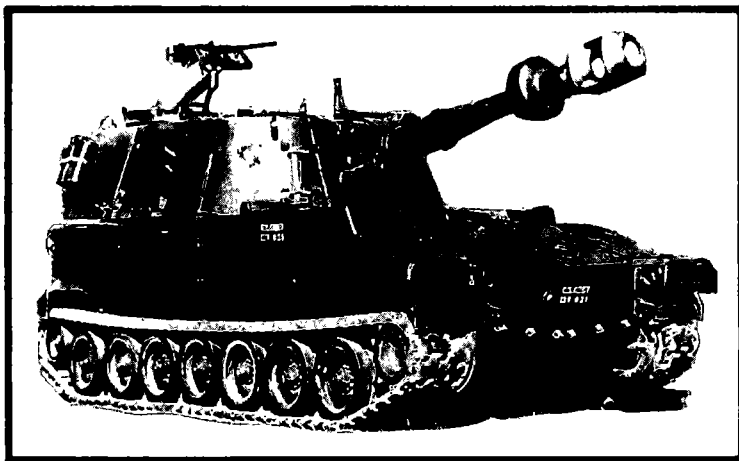
ARMAMENT: 1 x 155mm howitzer

RANGE: 14,600 meters

USERS: NATO, United States

ARTILLERY

M109 155mm SP Howitzer



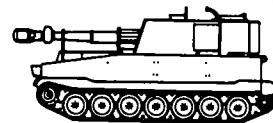
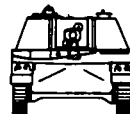
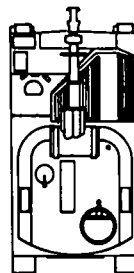
ARMAMENT: 1 x 155mm howitzer

GUN RANGE: 14,600 meters

RANGE: 354 km

USERS: Israel, Libya, NATO, Spain, United States

NOTE: The M109 is being replaced by the M109A1.



M109A1 155mm SP Howitzer



ARMAMENT: 1 x 155mm howitzer

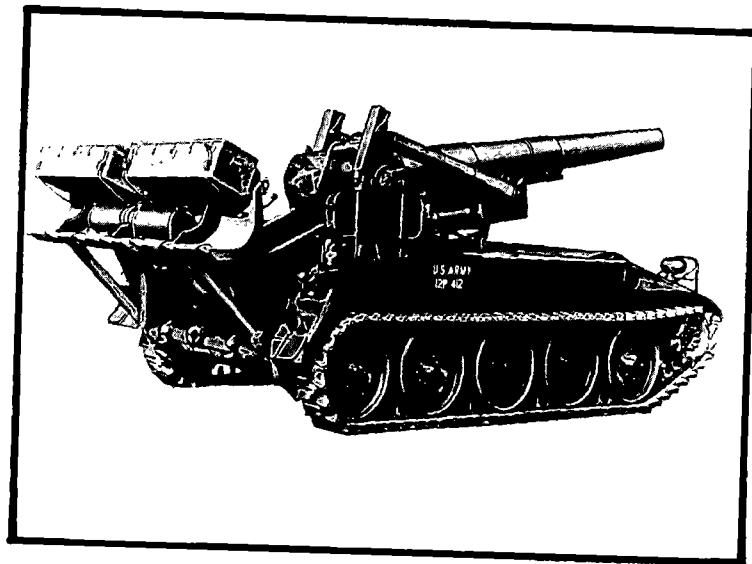
GUN RANGE: 18,100 meters

RANGE: 354 km

USERS: United States

ARTILLERY

M110 8" Howitzer

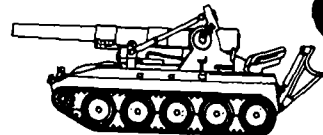
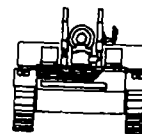
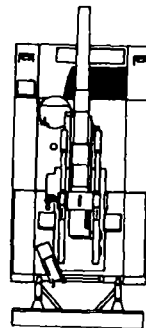


ARMAMENT: 1 x 8" howitzer

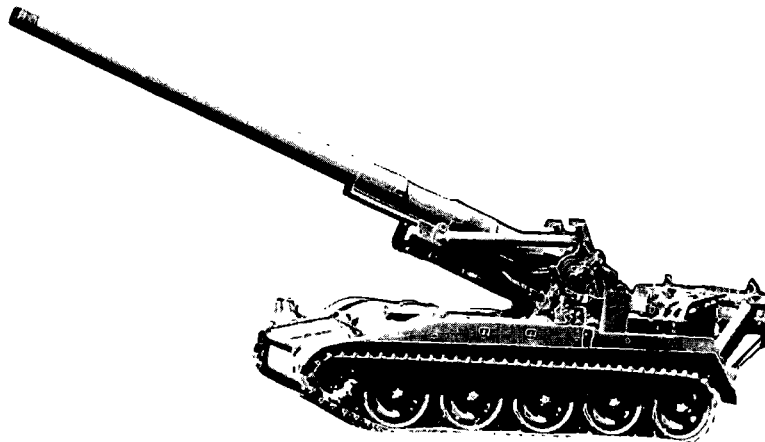
GUN RANGE: 16,800 meters

RANGE: 724 km

USERS: Iran, NATO, South Korea, United States



M110E2 8" Howitzer



ARMAMENT: 1 x 8" howitzer

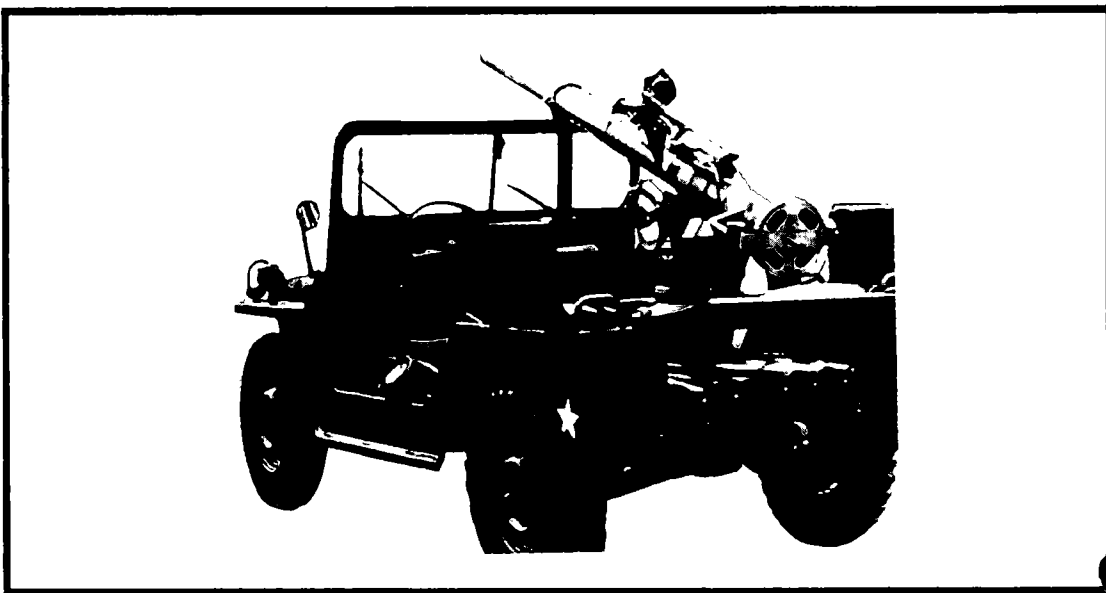
GUN RANGE: 16,800 + meters

RANGE: 724 km

USERS: United States

ARTILLERY

M40A1 106mm Recoilless Rifle

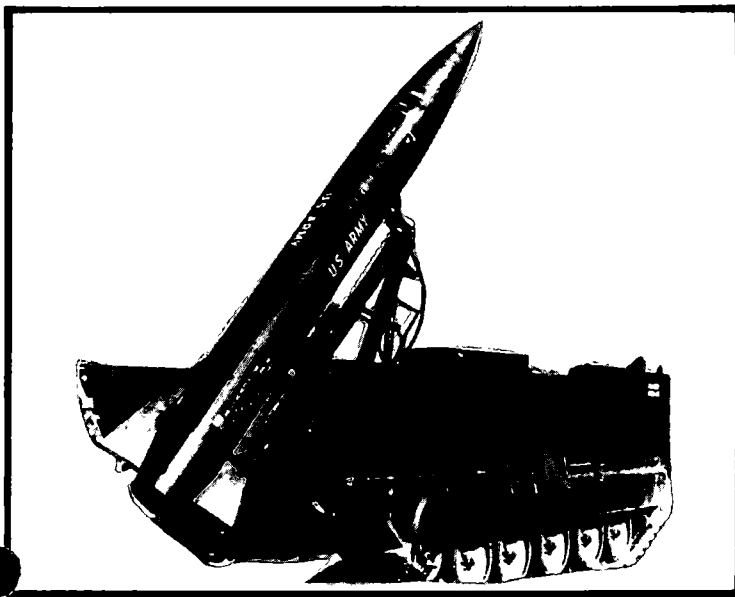


ARMAMENT: 1 x 106mm recoilless rifle

RANGE: 1,000 meters

USERS: United States, various other countries

LANCE Surface-to-Surface Missile



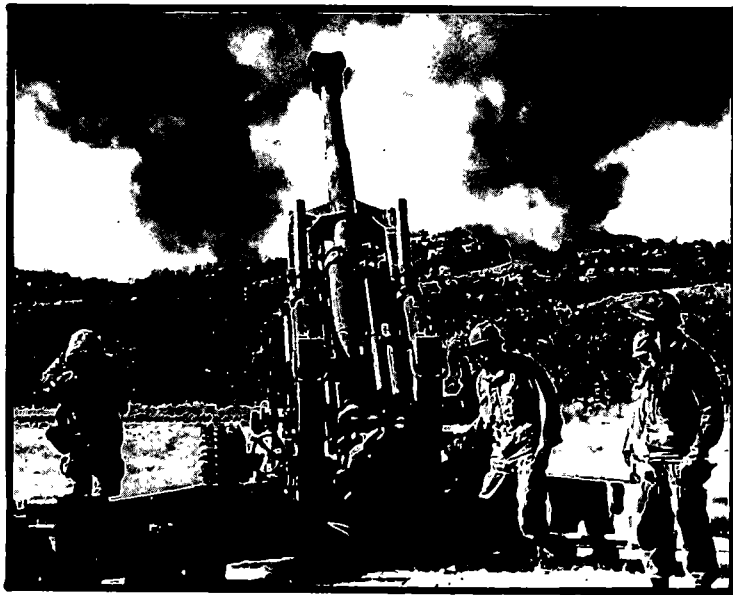
ARMAMENT: 1 x Lance missile (nuclear or high explosive)

RANGE: 110,000 meters (approximately)

USERS: Israel, NATO, United States

ARTILLERY

155mm Howitzer, M198

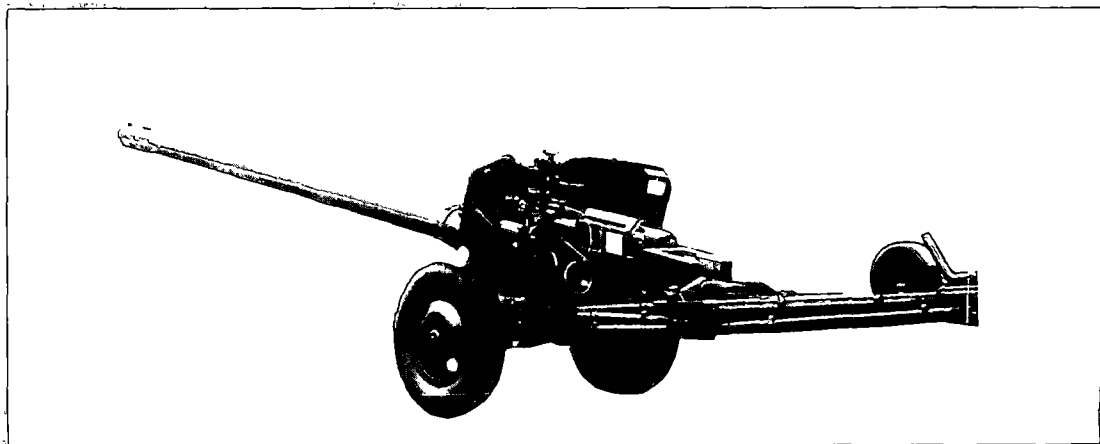


ARMAMENT: 1 x 155mm howitzer

GUN RANGE: 30,000 meters (with RAP)

USERS: United States

T-12/T-12A 100mm Antitank Gun



RECOGNITION FEATURES: Long tube with cylindrical "pepperpot" muzzle brake; single castor wheel near trail ends; winged shield angled to rear on either side, on T-12A only; added cylinder to right and above breech.

ARMAMENT: 1 x 100mm gun

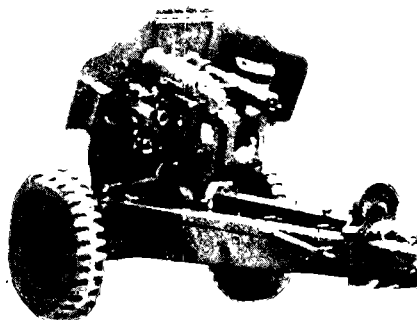
RANGE: 2,000 meters (direct fire)

USERS: Warsaw Pact, Yugoslavia

EMPLOYMENT: Antitank reserve

NOTE: T-12/T-12A batteries/battalions usually are held in rendezvous about 10 km in rear of the FEBA. When in firing position, platoons/batteries are 0.2 to 0.5 km behind the FEBA in the offense and 0.2 to 5 km in the defense. There are 18/24 T-12s in the antitank battalion of the motor rifle divisions.

D-20 152mm Gun-Howitzer



RECOGNITION FEATURES: Prominent base plate connected to bottom forward cradle for travel (same carriage as D-74); castor wheels and jacks at each trail end; scalloped winged shield with traveling central portion; shorter, larger diameter tube than D-74 with similar double-baffle winged, muzzle brake. Large, heavy gun not very mobile.

ARMAMENT: 1 x 152mm gun-howitzer

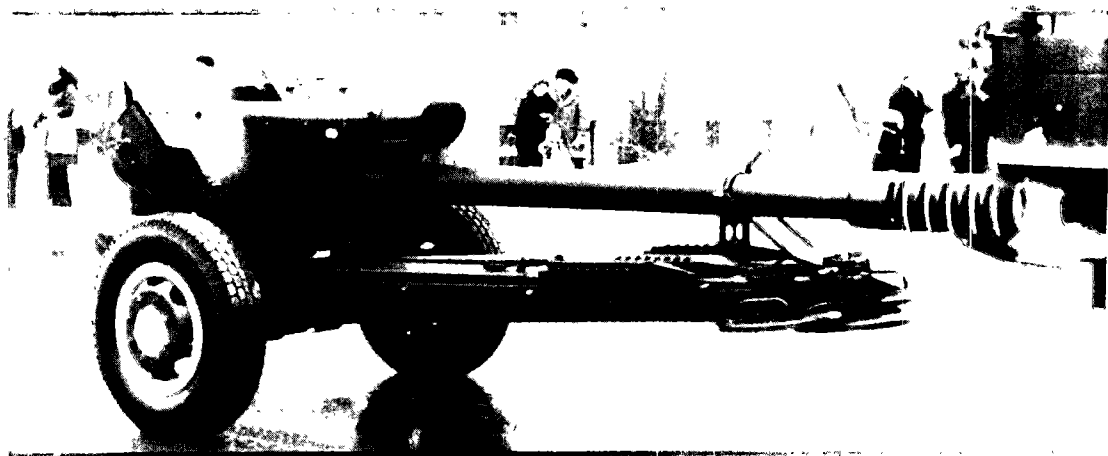
RANGE: 17,000 meters

USERS: East Germany, India, Vietnam, USSR, Warsaw Pact

EMPLOYMENT: Weapon should appear 3 km to 5 km behind the FEBA in offense or 4 km to 8 km in defense among units comprising the divisional and Army artillery regiment/brigades.

NOTE: Eighteen of these guns appear in the organic artillery of the Soviet motor rifle division and give general fire support.

D-30 122mm Howitzer



RECOGNITION FEATURES: Three-trailed configuration; trails fold together and attach to tube for travel; towed by muzzle; large recoil system atop gun tube; multi-baffle muzzle brake.

ARMAMENT: 1 x 122mm howitzer

RANGE: 15,300 meters

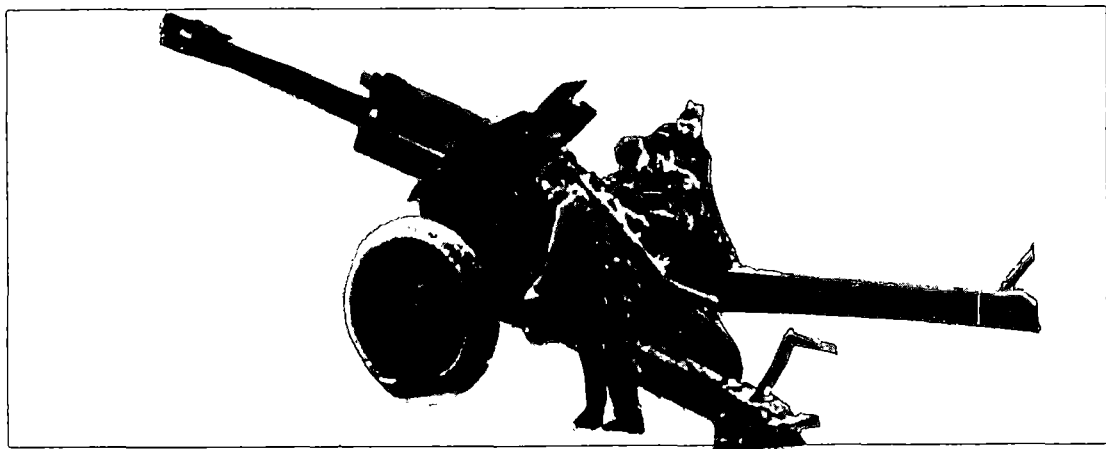
SPEED: 80 km/hr (towed)

USERS: China, Cuba, East Germany, Egypt, Finland, Syria, Vietnam, USSR, Warsaw Pact

EMPLOYMENT: Close support of maneuver company or battalion (regimental artillery battery and divisional artillery). Weapon should appear 1 km to 4 km behind the FEBA in offense or 2 km to 7 km in defense, depending on unit of assignment.

NOTE: Replacing M-30 at regimental level.

D-1 152mm Field Howitzer



RECOGNITION FEATURES: Essentially same appearance as 122mm howitzer, M-30 (M1938), except larger diameter tube and added double-baffle muzzle brake.

ARMAMENT: 1 x 152mm howitzer

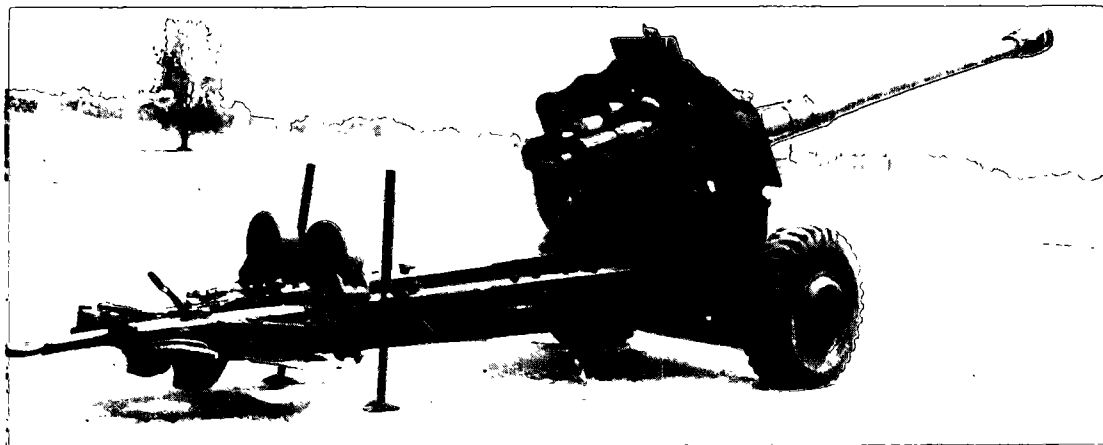
RANGE: 12,400 meters

SPEED: 40 km/hr (towed)

USERS: Albania, China, East Germany, Hungary, Poland, Syria, Vietnam

EMPLOYMENT: The weapon is being replaced in front line service by the 152mm, M55 (D-20), or SP 152mm howitzer (M1973).

D-74 122mm Field Gun



RECOGNITION FEATURES: Prominent base plate connected to bottom forward cradle for travel; castor wheels and jacks at each trail end; scalloped winged shield with traveling central portion; long tube and double-baffle, winged muzzle brake; semi-trailed load.

ARMAMENT: 1 x 122mm gun

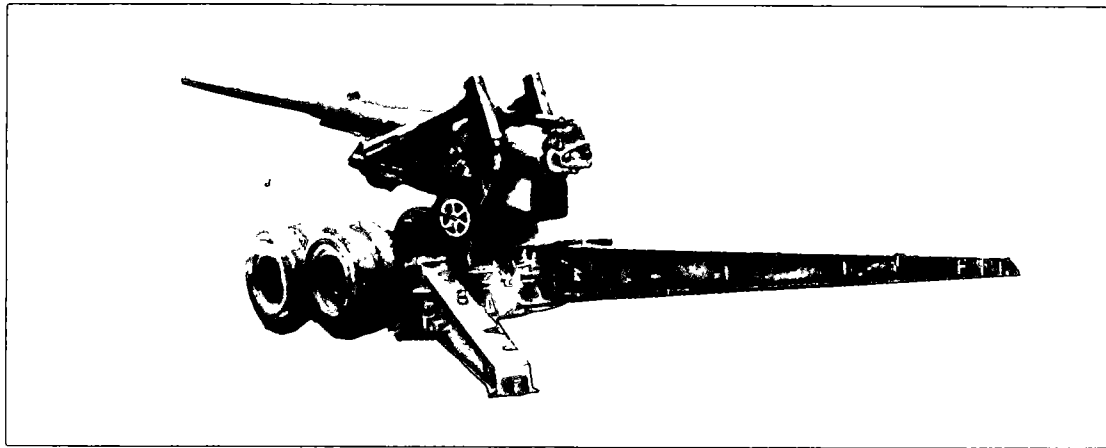
RANGE: 24,000 meters

SPEED: 50 km/hr (towed)

USERS: USSR, Warsaw Pact

EMPLOYMENT: Equivalent to US general support. Weapon should appear 4 km to 7 km behind the FEBA in offense or 5 km to 10 km in defense.

M-2 155mm Gun



RECOGNITION FEATURES: Long tube with large side-by-side recoil cylinders; the carriage uses four large dual tires for towing configuration. US "Long Tom" of World War II.

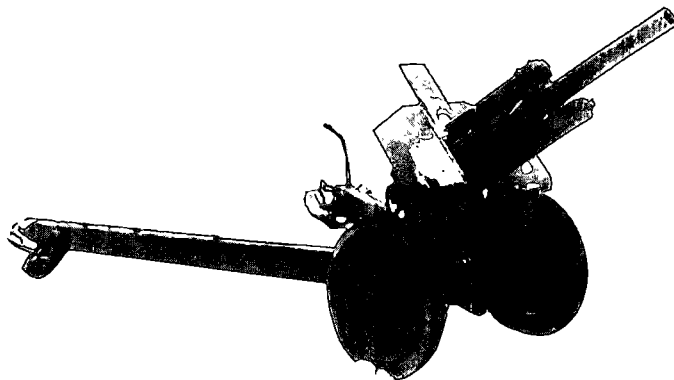
ARMAMENT: 1 x 155mm gun

RANGE: 22,005 meters

USERS: Yugoslavia

EMPLOYMENT: Heavy artillery

M-30 (M1938) 122mm Howitzer



RECOGNITION FEATURES: Symmetrical mildly winged shield sloped rearward at trunnion level with sliding center section at top; short tube and prominent (upper and lower) recoil system cylinders; handwheels on both sides of weapon. Generally towed, but also SP assault version exists.

ARMAMENT: 1 x 122mm howitzer

RANGE: 11,800 meters

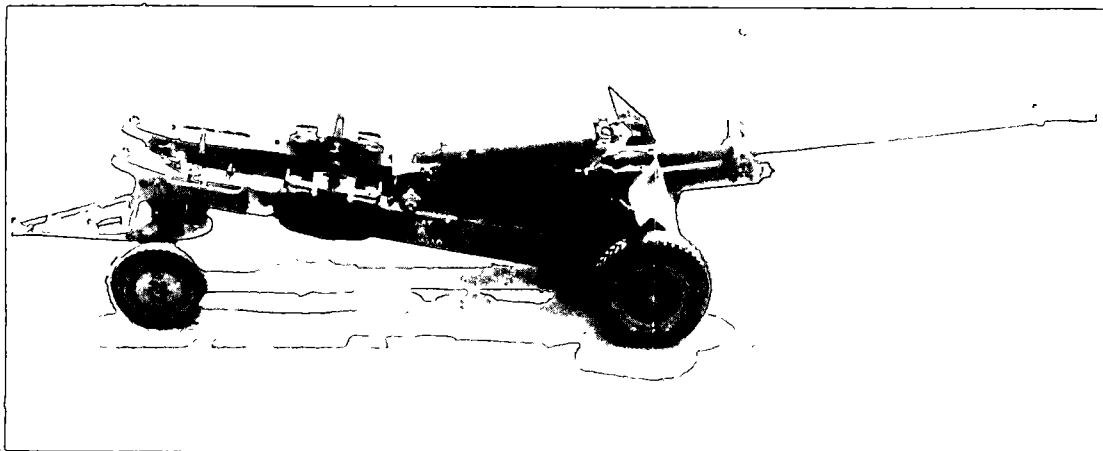
SPEED: 50 km/hr (towed)

USERS: Algeria, China, Congo, Cuba, Egypt, North Korea, Somalia, Vietnam, Yemen, USSR, Warsaw Pact

EMPLOYMENT: Direct support of maneuver battalion (divisional artillery). Weapon should appear 1 km to 3 km behind the FEBA in offense and 2 km to 6 km in defense. Deployed in batteries of six guns, sometimes with three batteries to a battalion.

NOTE: Obsolescent; being replaced by 122mm howitzer (D-30). Signature of motor rifle regiment.

M-46 130mm Field Gun



RECOGNITION FEATURES: Long, thin tube with a "pepperpot" muzzle brake; carriage has single tires, winged shield, angled rearward; recoil system cylinder positioned over and under the tube.

ARMAMENT: 1 x 130mm field gun

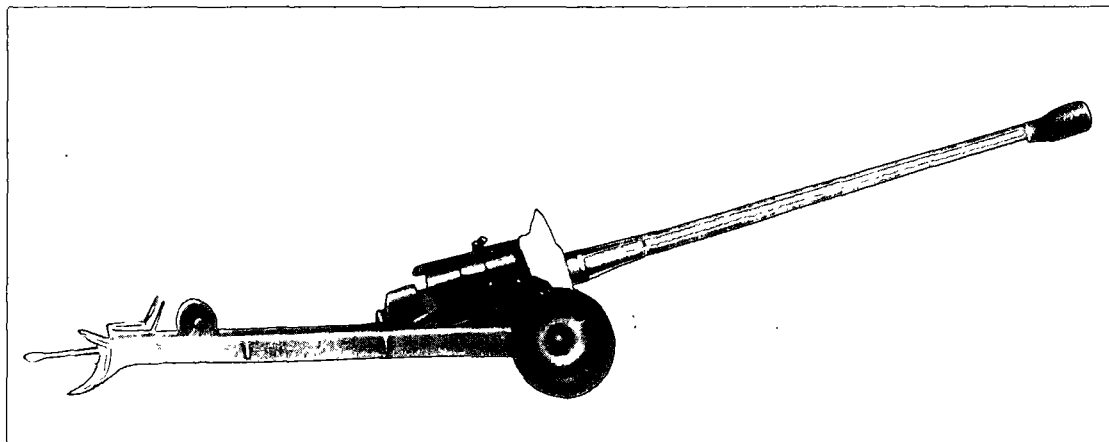
RANGE: 27,500 meters

SPEED: 50 km/hr (towed)

USERS: China, East Germany, Egypt, Finland, India, Iran, Iraq, Mongolia, Nigeria, North Korea, Pakistan, Syria, USSR, Vietnam, Warsaw Pact, Yugoslavia

EMPLOYMENT: Weapon should appear 4 km to 8 km behind the FEBA in offense and 5 km to 10 km in defense. In combat, this general support weapon is found in Fronts and Army artillery brigades and regiments.

M1955 100mm Field Gun



RECOGNITION FEATURES: Long, thin tube; single tires on carriage; steel castor wheel at trail ends; perforated "pepperpot" muzzle brake.

ARMAMENT: 1 x 100mm gun

RANGE: 21,000 meters

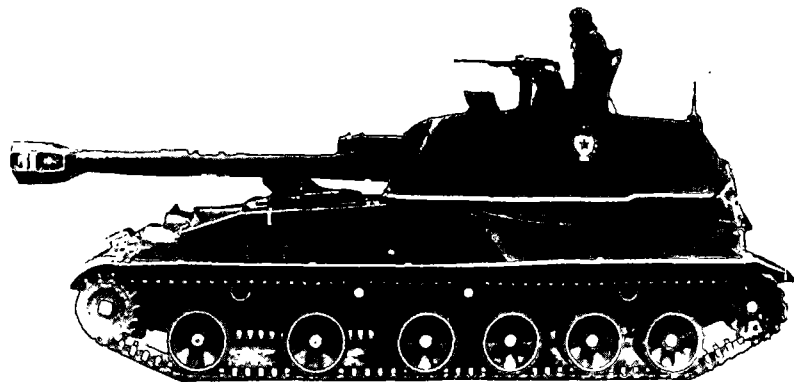
SPEED: 50 km/hr (towed)

USERS: China, East Germany, India, Mongolia, North Korea, Somalia, USSR, Vietnam, Warsaw Pact

EMPLOYMENT: Antitank reserve

NOTE: 100mm gun units may be held in rendezvous about 10 km in rear of the FEBA. When emplaced, this weapon appears in platoon or battery formation 0.2 km to 0.4 km behind the FEBA in the offense and 0.1 km to 5.0 km in the defense. Effective as antitank and field gun.

M1973 152mm Self-Propelled Gun



236

RECOGNITION FEATURES: Six roadwheels; tube (muzzle brake) overhang; two recoil cylinders above the tube; turret roof has single rotatable hatch; large hatch on right side of turret (driver location); not amphibious.

ARMAMENT: 1 x 152mm gun
1 x 12.7mm machinegun (antiaircraft, optional)

GUN RANGE: 17,300 meters

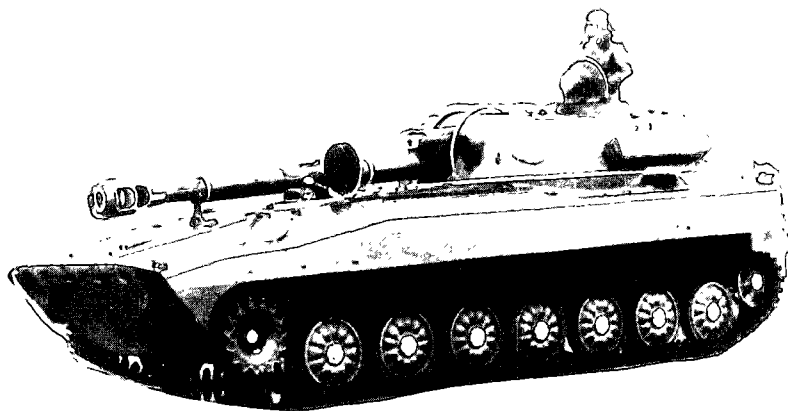
SPEED: 50 km/hr

USERS: USSR

EMPLOYMENT: Equivalent to United States general support. Weapon should appear 3 km to 5 km behind the FEBA in offense and 4 km to 8 km in defense.

NOTE: Armor for the five-man crew is thin skinned.

M1974 122mm Self-Propelled Gun



RECOGNITION FEATURES: Long gun tube is flush with forward edge of amphibious vehicle; double-baffle muzzle brake; seven roadwheels; drive sprocket at front and rear-mounted, low-silhouetted idler at the rear turret; radiator grill left side of vehicle; engine at center hull; driver on left; uses some components of the PT-76; large infrared searchlight mounted on top left of turret.

ARMAMENT: 1 x 122mm gun

GUN RANGE: 15,300 meters
21,900 meters (with RAP)

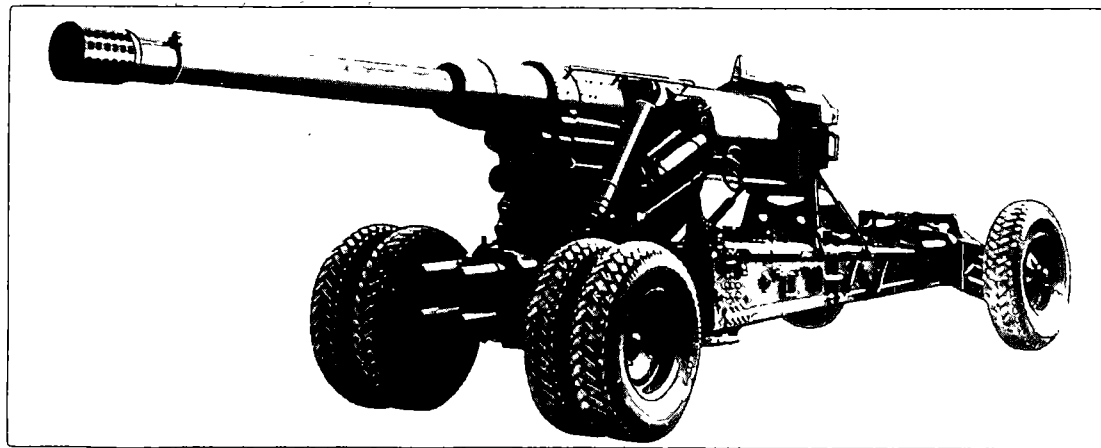
SPEED: 65 km/hr—land
5 km/hr—water

USERS: USSR, selected Warsaw Pact nations

EMPLOYMENT: Regimental artillery; all terrain fire support for tank and motorized rifle divisions. Usually 1 1/2 km to 7 km behind line-of-contact. As direct support during attack, may follow tanks and APCs by 500 to 1,000 meters, attacking infantry and ATGMs.

NOTE: Armor protection is slight for the four-man crew.

S-23 180mm Gun



RECOGNITION FEATURES: Exposed polished surface, mostly noticeable in traveling mode, when out of battery; two heavy dual tires to support carriage; tube has large "pepperpot" muzzle brake; single wheels attached for towing.

ARMAMENT: 1 x 180mm gun

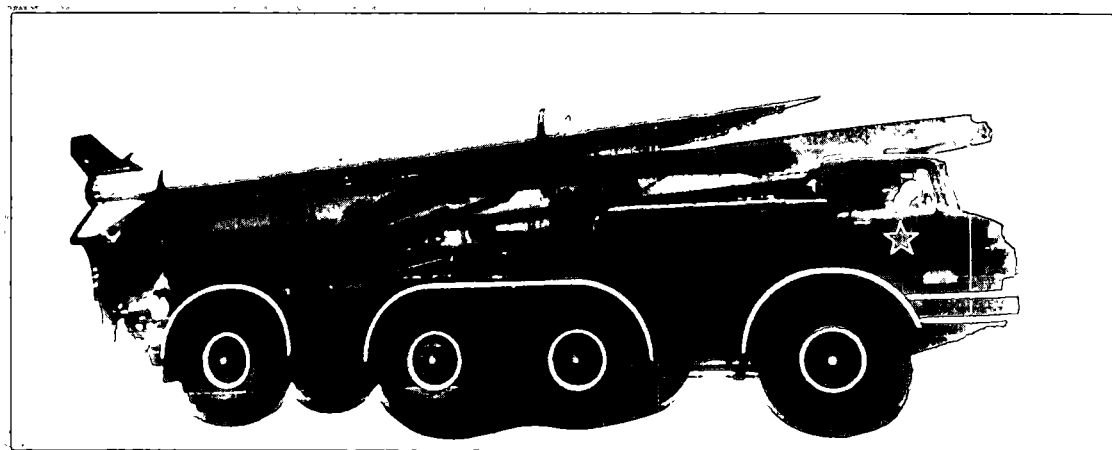
GUN RANGE: 30,000 meters
43,000 meters (with rocket assisted projectile)

SPEED: 50 km/hr (towed)

USERS: China, Syria, USSR, and USSR-sponsored nations

EMPLOYMENT: Equivalent to US general support (nondivisional weapon). Weapon should appear approximately 7 km to 12 km behind the FEBA in offense, 10 km to 16 km in defense. May have nuclear capability.

FROG-7



ARTILLERY

RECOGNITION FEATURES: Uses wheeled transporter-launcher based on ZIL-135 eight-wheeled truck; has on-board crane; long (30 ft) rocket.

ARMAMENT: HE, nuclear, and chemical warheads

MISSILE RANGE: 70,000 meters

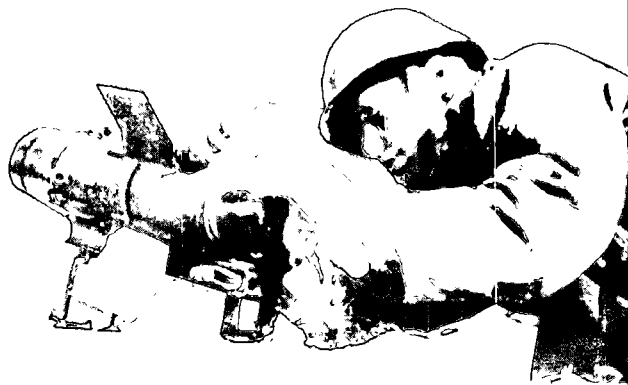
SPEED: 65 km/hr

RANGE: 500 km

USERS: Egypt, Iraq, North Korea, Syria, USSR, Warsaw Pact

EMPLOYMENT: Due to its vulnerability and long range, employed from the rear

SAGGER MISSILE



RECOGNITION FEATURES: Miniature-shaped rocket; four-finned, vehicular or ground mounted.

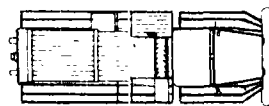
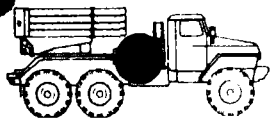
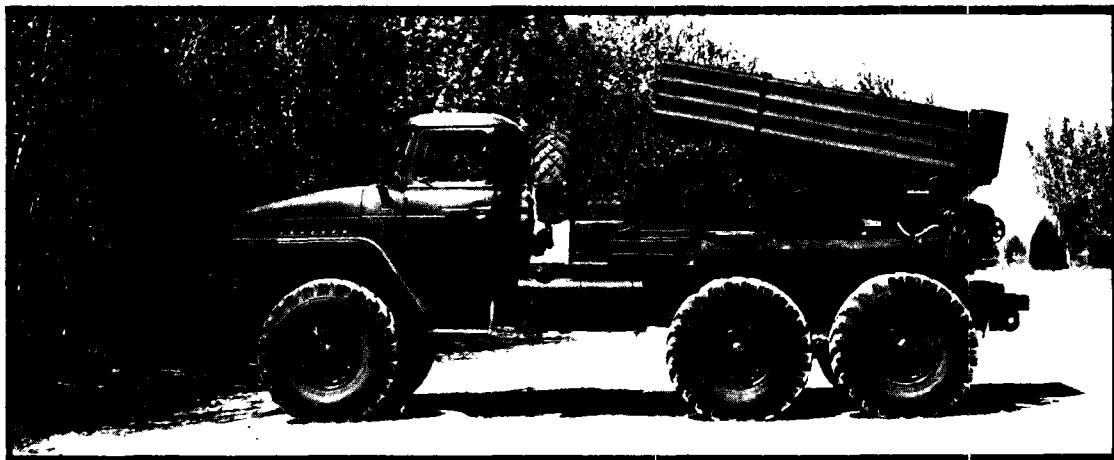
ARMAMENT: Shaped warhead

RANGE: 3,000 meters

USERS: USSR, Warsaw Pact

EMPLOYMENT: Standard antiarmor missile for Warsaw Pact countries

BM-21 122mm Rocket Launcher



ARTILLERY

RECOGNITION FEATURES: Square, 40-tube cluster (4 rows of 10 tubes), often canvassed for protection; mounted to a truck chassis, troop seats forward of the rear wheels. Vehicle can be recognized by the distinctive fender design and spare tire to rear of cabin.

ARMAMENT: 40 x 122mm rocket

ROCKET RANGE: 20,500 meters

SPEED: 75 km/hr

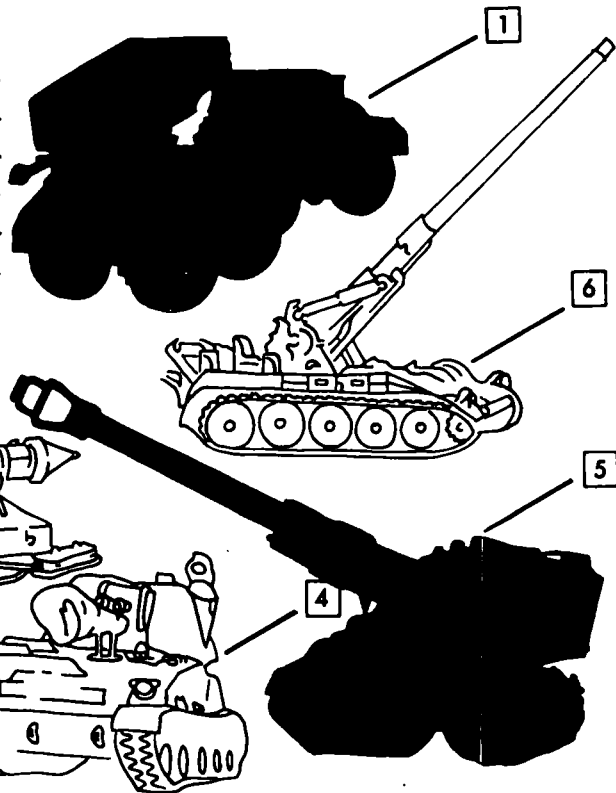
RANGE: 500 km

USERS: USSR, USSR-sponsored nations

EMPLOYMENT: These launchers are normally organized into battalions and assigned to division artillery; 18 are organic to each Soviet motorized rifle and tank division. Additional BM-21 battalions are assigned as Front-level for subsequent allocation to Armies/divisions making the main effort.

Can you identify these?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____



LIGHT ARMORED VEHICLES

YPR-765 -----	250	FUG OT-65 -----	284
YP408 8 x 6 -----	252	OT-64C -----	286
LUCHS (LYNX) 8 x 8 -----	254	D-944 -----	288
MARDER -----	256	BRDM 2 -----	290
CVR (W) FOX -----	258	BTR-50 PK -----	292
SCORPION -----	260	BTR-60P/PA -----	294
FERRET -----	262	BTR-60 PB -----	296
FV432 -----	264	BTR-152 -----	298
AML -----	266	BMD ACV -----	300
AMX 10RC -----	268	BRDM -----	302
AMX 10P -----	270	BMP -----	304
M113A1 -----	272		
VAB -----	274		
PBV-302 -----	276		
COUGAR -----	278		
SPARTAN -----	280		
APE 4 x 4 -----	282		

Generally speaking, all Soviet APCs—

- Apart from the BTR-152, are amphibious.
- Are armed—varying from pintle-mounted 7.62mm machinegun to a turreted 73mm cannon on the BMP.
- Have infrared driving aids with a minimum range of 50 meters and infrared fire control equipment for turret-mounted armament of the BMP.

YPR-765 Armored Infantry Fighting Vehicle



APC

RECOGNITION FEATURES: One-man weapon station; based on modified M113A1 APC chassis; amphibious.

ARMAMENT: 1 x 25mm automatic gun
1 x 7.62mm machinegun (coaxial)

MAIN GUN RANGE: 2,000 meters

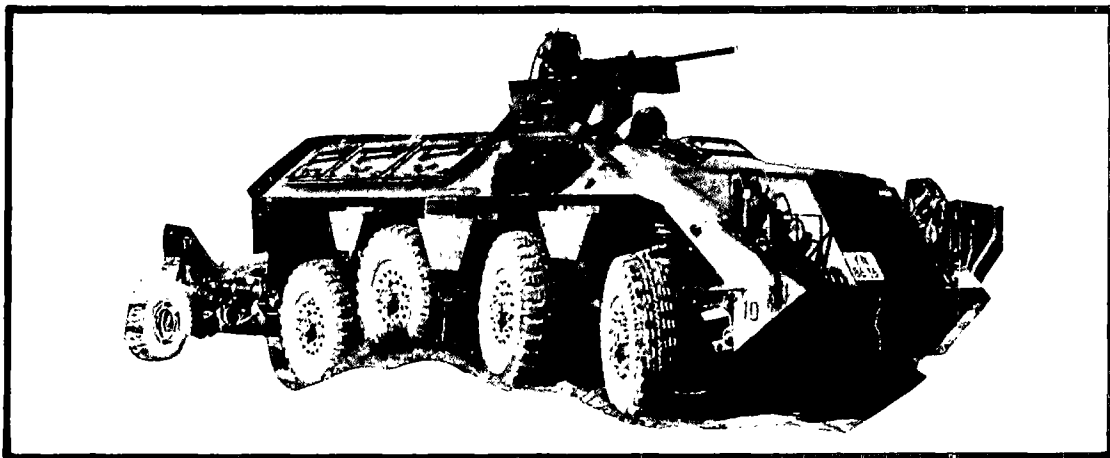
SPEED: 61 km/hr

RANGE: 450 km

USERS: Netherlands, Philippines

EMPLOYMENT: Improved TOW, squad IFV, command vehicle, 120mm mortar prime mover, ambulance, cargo carrier, surveillance radar carrier by armored infantry and combat support units.

NETHERLANDS YP408, 8 x 6 APC



RECOGNITION FEATURES: Four wheels each side, "armored truck."

ARMAMENT: .50 caliber machinegun

GUN RANGE: 750 meters (antiaircraft role)

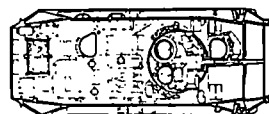
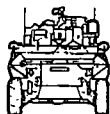
SPEED: 82 km/hr

RANGE: 500 km

USERS: Netherlands

EMPLOYMENT: Squad APC, command vehicle, TOW missile tank destroyer, 120mm mortar prime mover, ambulance, cargo carrier, radar carrier by Dutch mechanized infantry.

LUCHS (Lynx) 8 x 8 Armored Reconnaissance Vehicle



RECOGNITION FEATURES: Eight-roadwheeled, amphibious, reconnaissance vehicle; large gap between second and third roadwheel; sloping sides; long slope at front and rear; round turret at front over second roadwheel; two water propulsion propellers at rear.

ARMAMENT: 1 x 20mm cannon
2 x 7.62mm machineguns (coaxial and roof-mounted)

GUN RANGE: 2,000 meters (1,500 meters antiaircraft)

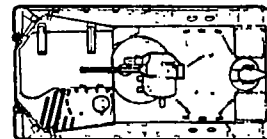
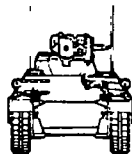
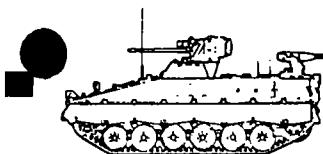
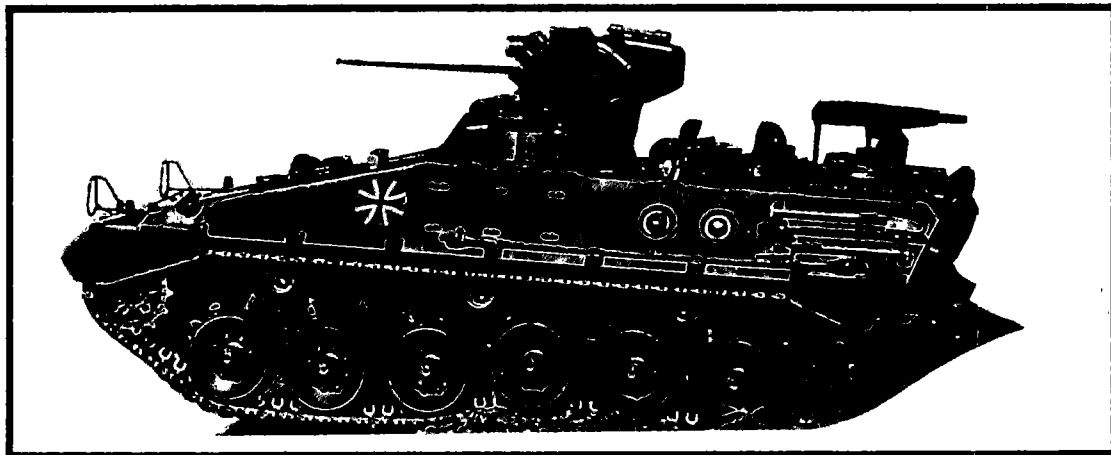
SPEED: 90 km/hr—land
10 km/hr—water

RANGE: 800 km

USERS: West Germany

EMPLOYMENT: As divisional reconnaissance vehicle; may operate with Leopard tanks. Has important secondary antiaircraft role.

MARDER INFANTRY FIGHTING VEHICLE



APC

RECOGNITION FEATURES: Six-roadwheeled, tracked; 20mm cannon mounted on low, oval turret; 7.62mm machinegun on remote-controlled cupola at center rear.

ARMAMENT: 1 x 20mm automatic cannon
1 x 7.62mm machinegun (coaxial)
1 x 7.62mm machinegun (rear cupola)
1 x MILAN antitank guided missile launcher right side of turret on some vehicles

GUN RANGE: 2,000 meters (1,500 meters antiaircraft)

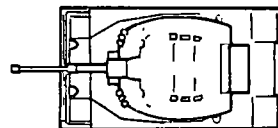
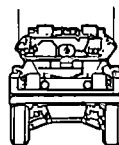
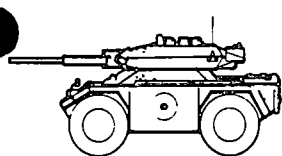
SPEED: 75 km/hr

RANGE: 520 km

USERS: West Germany

EMPLOYMENT: Armored infantry battalions of armored and armored infantry brigades

FOX CVR (W) Armored Reconnaissance Vehicle



RECOGNITION FEATURES: The hull is larger than the Ferret's; four wheels; large, flat undercut turret with square bin in rear, housing a long, thin gun.

ARMAMENT: 1 x 30mm Rarden cannon
1 x 7.62mm machinegun (coaxial)

MAIN GUN RANGE: 2,000 meters

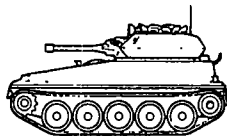
SPEED: 105 km/hr

RANGE: 435 km

USERS: United Kingdom

EMPLOYMENT: Wheeled, air-portable, reconnaissance vehicle — normally operates attached to armored and mechanized infantry battalions.

SCORPION



APC

260

RECOGNITION FEATURES: Five-wheeled; amphibious; air transportable; reconnaissance; general purpose; long front slope to hull; short 76mm gun barrel, or long slender 30mm gun; may have prominent upturned exhaust, right hand side.

ARMAMENT: 1 x 76mm gun or 1 x 30mm gun
1 x 7.62mm machinegun (coaxial)

MAIN GUN RANGE: 1,600 meters (76mm gun) or 2,000 meters (30mm gun)

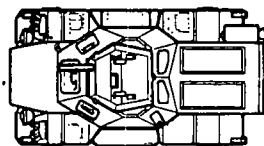
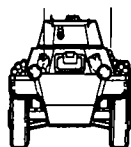
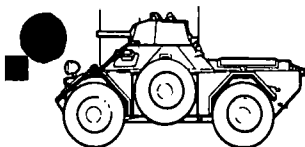
SPEED: 87 km/hr

RANGE: 644 km

USERS: Abu Dhabi, Belgium, Brunei, Dubai, Ghana, Honduras, Iran, Middle East, New Zealand, Nigeria, Philippines, Thailand, United Kingdom

EMPLOYMENT: Armored reconnaissance, armored support, patrol and escort

FERRET SCOUT CAR



APC

RECOGNITION FEATURES: Four-wheeled, faceted-shaped hull; spare wheel mounted on center on left side; square sides may appear with or without turret.

ARMAMENT: 1 x 7.62mm machinegun

GUN RANGE: 1,000 meters

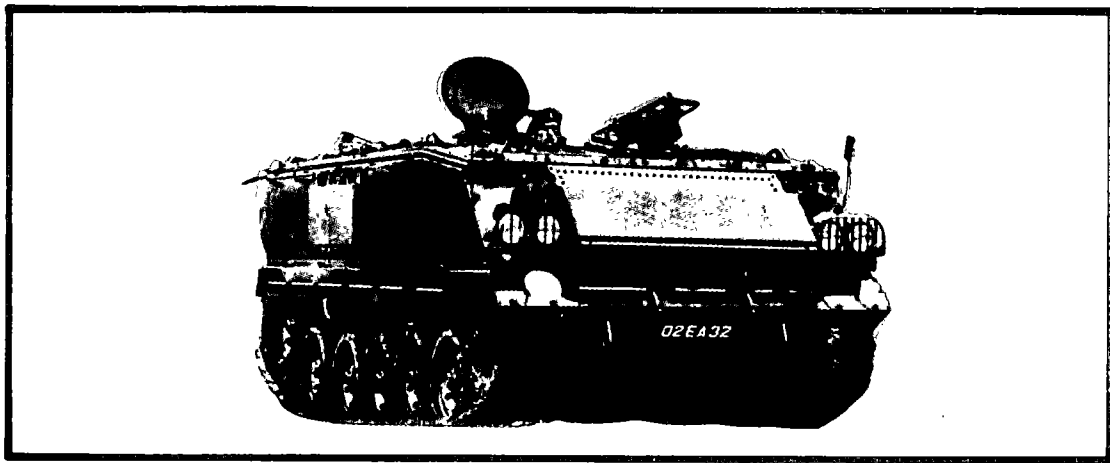
SPEED: 93 km/hr

RANGE: 305 km

USERS: NATO, United Kingdom

EMPLOYMENT: Reconnaissance, liaison and internal security vehicle

FV432 APC



RECOGNITION FEATURES: Resembles US M113A1 APC, amphibious using flotation screen.

ARMAMENT: 1 x 7.62mm machinegun

GUN RANGE: 500 meters (antiaircraft role)

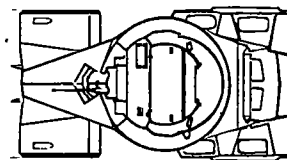
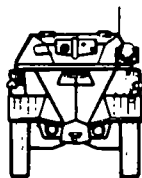
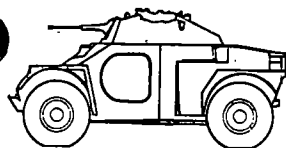
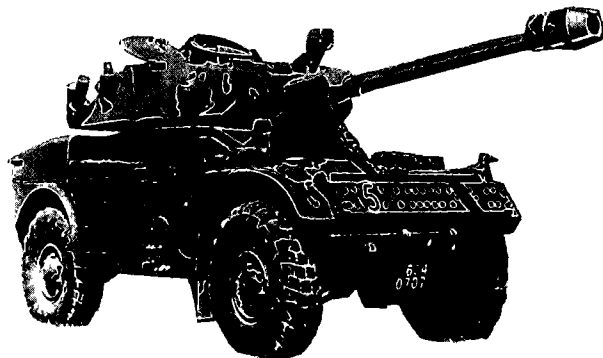
SPEED: 52 km/hr

RANGE: 483 km

USERS: India, United Kingdom

EMPLOYMENT: Mechanized infantry squad APC; 81mm mortar and 120mm recoilless rifle carriers, FV438 Swingfire missile tank destroyer, command/commo vehicles, ambulance, engineer mine layer, artillery fire direction center.

AML ARMORED CAR



APC

RECOGNITION FEATURES: Four-wheeled drive, high-speed vehicle. Two versions: H90 has a long, 90mm gun with double-baffle muzzle brake; H60 has a 60mm breech-loaded mortar, and can be identified by rounded turret.

ARMAMENT: 1 x 90mm gun
1 x 7.62mm machinegun (coaxial)
or
1 x 60mm mortar and 2 x 7.62mm machineguns, or
1 x 12.7mm machinegun or 1 x 20mm cannon

MAIN GUN RANGE: 1,000 meters

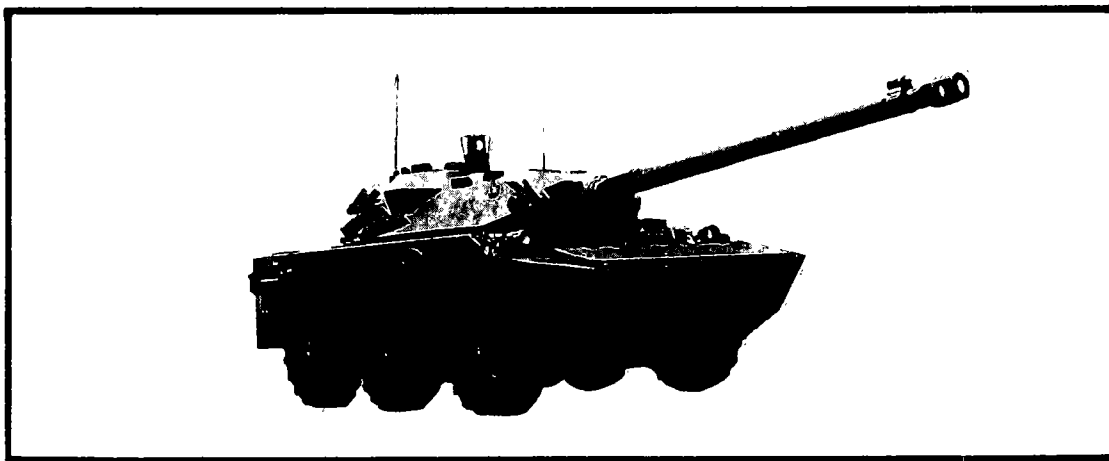
SPEED: 106 km/hr

RANGE: 612 km

USERS: French Armed Forces, exported to numerous countries

EMPLOYMENT: Used by light armored cavalry battalions for internal security and close reconnaissance.

AMX-10RC Armored Reconnaissance Vehicle



(Fire Support)

RECOGNITION FEATURES: Six-wheeled "tank" with 105mm gun in large turret; amphibious, hydropneumatic (variable) suspension.

ARMAMENT: 1 x 105mm main gun
1 x 7.62mm machinegun (coaxial)
Laser rangefinder

MAIN GUN RANGE: 2,500 meters

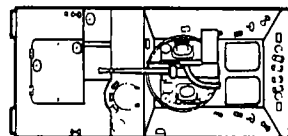
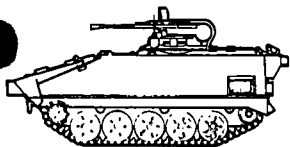
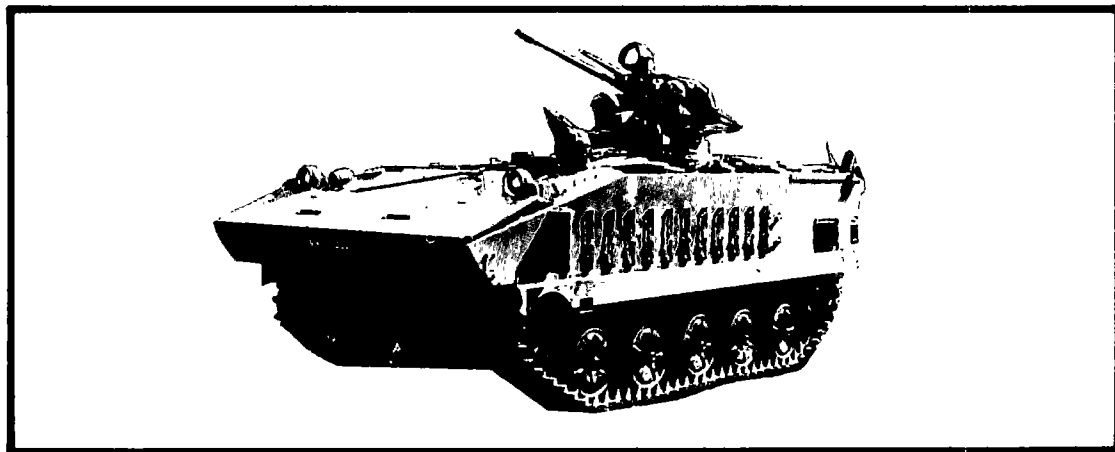
SPEED: 85 km/hr

RANGE: 800 km

USERS: France, Morocco

EMPLOYMENT: As corps-level recon while with jeeps; as fire support vehicle with VAB wheeled APCs by French mechanized infantry divisions.

AMX 10P INFANTRY FIGHTING VEHICLE



APC

RECOGNITION FEATURES: Tracked vehicle with five roadwheels and five return rollers; low-silhouette; sloped front, with turret mounted over fourth roadwheel in left side of chassis.

ARMAMENT: 1 x 20mm cannon
1 x 7.62mm machinegun (coaxial)

MAIN GUN RANGE: 2,000 meters (1,500 meters antiaircraft)

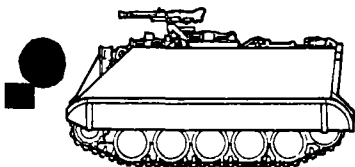
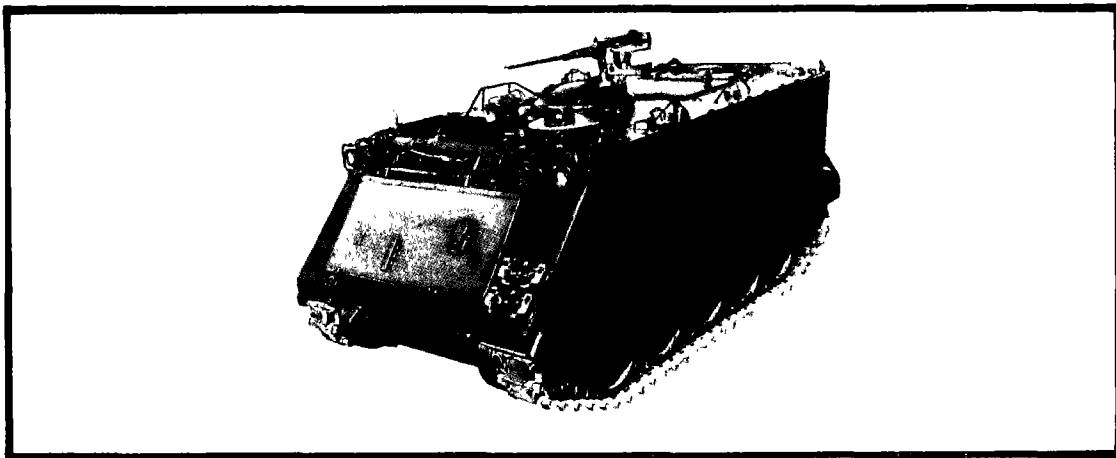
SPEED: 65 km/hr — land
8 km/hr — water

RANGE: 600 km

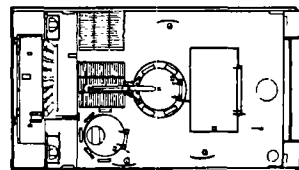
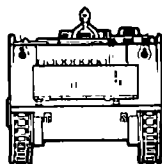
USERS: France, Greece, Saudi Arabia

EMPLOYMENT: As squad IFV vehicle, prime mover for 120mm mortar, command vehicle, and RATAc radar carrier. French armored divisions.

M113A1 ARMORED PERSONNEL CARRIER



APC



RECOGNITION FEATURES: Light-weight, low-silhouette, amphibious carriers are full-tracked with five roadwheels, air-transportable and air-droppable.

ARMAMENT: 1 x .50 caliber machinegun or TOW antitank missile launcher (Australia and Switzerland have added 76mm and 20mm gun turrets on some of their vehicles).

GUN RANGE: 1,500 meters (horizontal), 1,000 meters (antiaircraft)

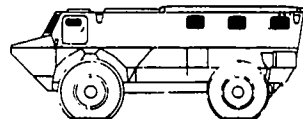
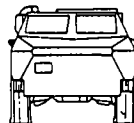
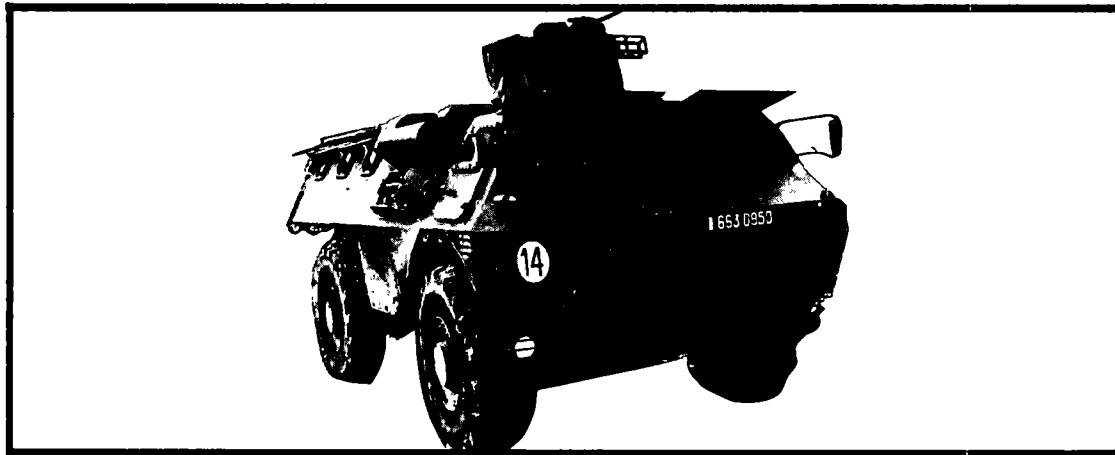
SPEED: 68 km/hr

RANGE: 500 km

USERS: United States Army and those of over 40 countries throughout the world

EMPLOYMENT: Transport troops or cargo in support of tactical operations

VAB 4 x 4 (or 6 x 6) APC



APC

RECOGNITION FEATURES: Four or six wheels; rectangular hull, blunt nose.

ARMAMENT: 1 x 7.62mm machinegun (roof)

GUN RANGE: 500 meters (antiaircraft range)

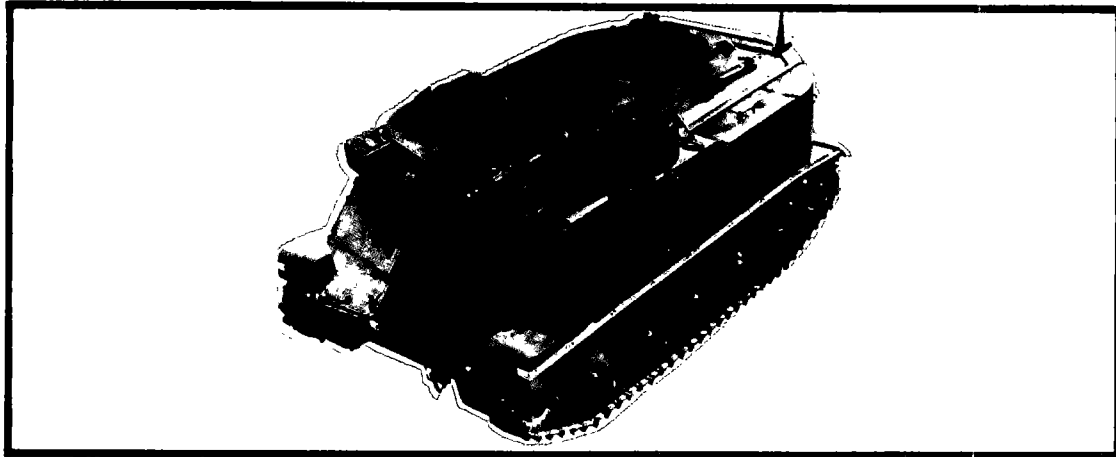
SPEED: 90 km/hr

RANGE: 1,000 km

USERS: France, Morocco

EMPLOYMENT: Squad APC, command vehicle, 120mm mortar prime mover, artillery fire direction center, MILAN and HOT missile tank destroyer, twin 20mm SP anti-aircraft gun, ambulance, etc., by French mechanized infantry divisions and other units.

PVB-302 IFV



APC

RECOGNITION FEATURES: Resembles M113A1 APC with turret on left side; has five large roadwheels; rounded corners.

ARMAMENT: 1 x 20mm cannon

MAIN GUN RANGE: 1,500 meters
1,000 meters (antiaircraft)

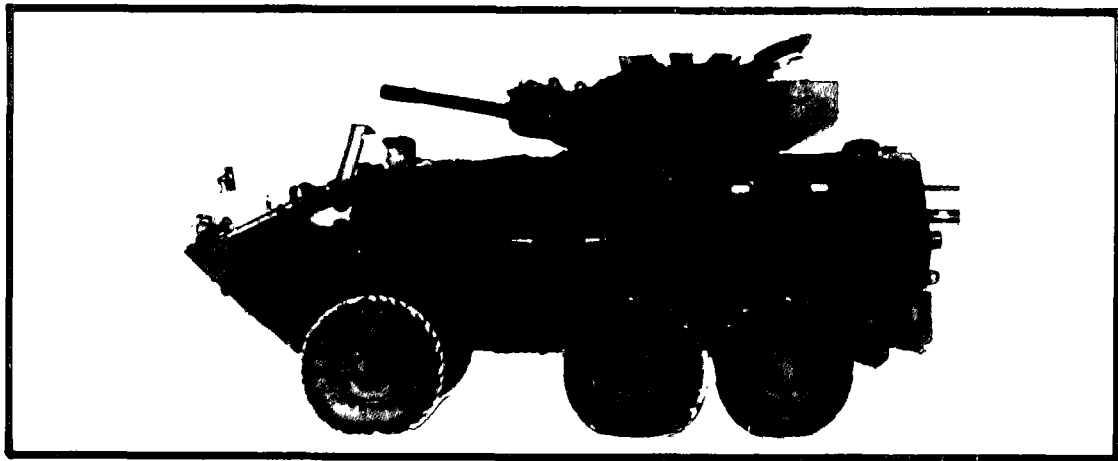
SPEED: 65 km/hr—land
8 km/hr—water

RANGE: 300 km

USERS: Sweden

EMPLOYMENT: Infantry squad IFV alongside "S" tanks; brigade reconnaissance vehicle.

COUGAR 6 x 6 Reconnaissance Fire Support Vehicle



RECOGNITION FEATURES: Six wheels, long glacis, Scorpion 76mm gun, two-man turret.

ARMAMENT: 1 x 76mm gun
1 x 7.62mm machinegun (coaxial)

MAIN GUN RANGE: 1,600 meters (effective)

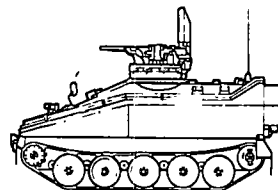
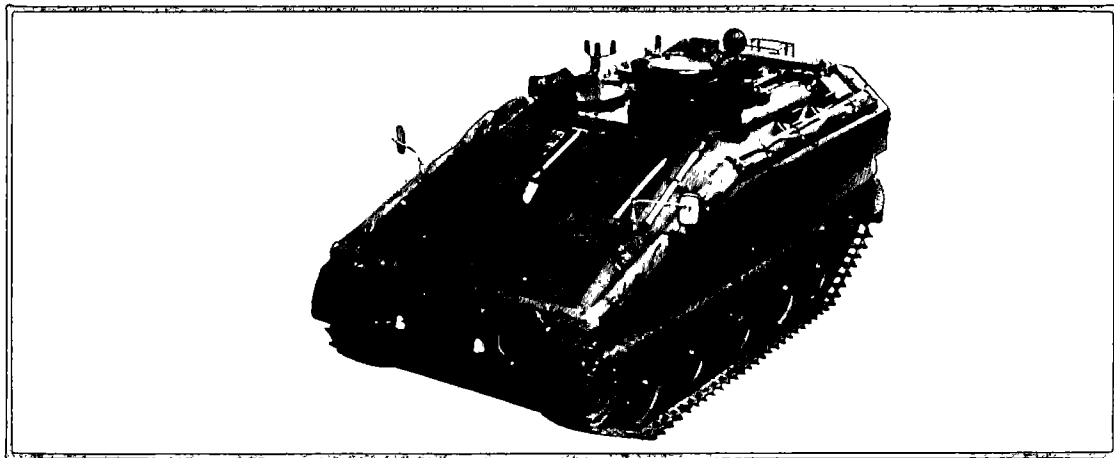
SPEED: 100 km/hr—land
10.5 km/hr—water

RANGE: 600 km

USERS: Canada

EMPLOYMENT: Reconnaissance fire support for Lynx C and R carriers

SPARTAN APC



APC

RECOGNITION FEATURES: Five wheels, long front slope, uses Scorpion CVR(T) basic chassis, slightly raised rear hull structure on variants.

ARMAMENT: 1 x 7.62mm machinegun

GUN RANGE: 500 meters (antiaircraft role)

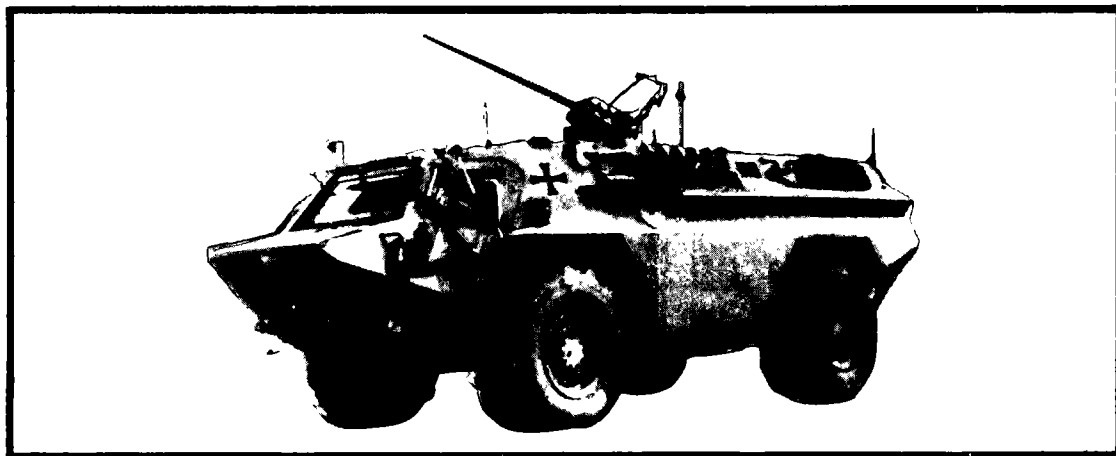
SPEED: 80 km/hr

RANGE: 483 km

USERS: Belgium, United Kingdom

EMPLOYMENT: APC alongside Scorpion and Scimitar in recon units, Striker Swingfire missile tank destroyer. Sultan command vehicle, Samaritan ambulance, and Samson recovery vehicle with various type units.

APE 4 x 4 Armored Reconnaissance Vehicle



RECOGNITION FEATURES: Four overside wheels, rectangular hull lines (similar to TPZ-1 6 x 6 APC); ring or turret mounted cannon.

ARMAMENT: 1 x 20mm gun

GUN RANGE: 2,000 meters
(1,500 meters antiaircraft)

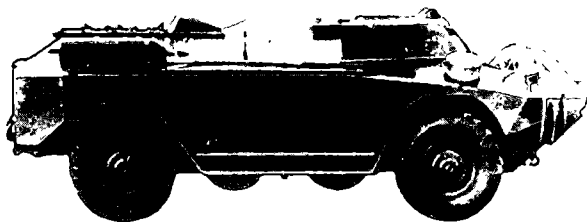
SPEED: 80 km/hr—land
12 km/hr—water

RANGE: 800 km

USERS: West Germany

EMPLOYMENT: Combat brigade and battalion level scout vehicle; combat engineer reconnaissance vehicle

FUG OT-65 Armored Reconnaissance Vehicle (FUG-70)



RECOGNITION FEATURES: Four-wheeled, amphibious, armored reconnaissance vehicle; has two sets of rough terrain belly wheels that may be raised or lowered; has two water jet exhausts.

ARMAMENT: *1 x 7.62mm machinegun

GUN RANGE: 1,000 meters

SPEED: 80 km/hr— land
10 km/hr—water

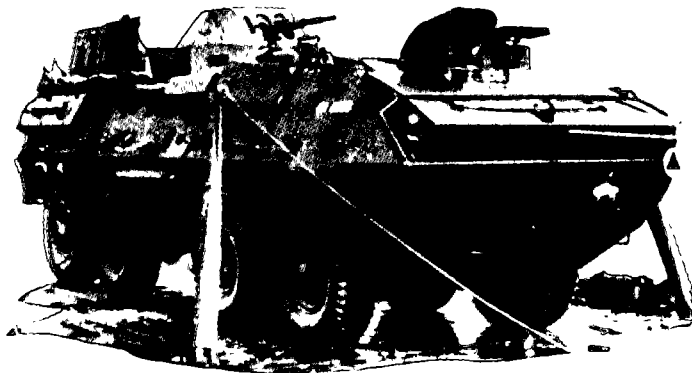
RANGE: 600 km

USERS: Czechoslovakia, Hungary, Poland

EMPLOYMENT: Scouts, ambulance, radiological-chemical reconnaissance vehicle

*Two versions: Model FUG OT-65 with 7.62mm machinegun; model FUG OT-65A with turret and 1 x 7.62mm machinegun internally and 1 x 82mm T-21 recoilless gun externally. This version is in Czechoslovakia service only. Range is 500 km. FUG-70 may have turret with one 23mm automatic cannon and one 7.62mm machinegun.

OT-64C ARMORED PERSONNEL CARRIER



RECOGNITION FEATURES: Eight-wheeled, amphibious; distinctive gap between front and rear sets of wheels; boat-shaped hull with sloped armor; exhaust system well forward on sides, extends back halfway on vehicle.

ARMAMENT: 1 x 14.5mm machinegun
1 x 7.62mm machinegun
Optional—2 x SAGGER

MAIN GUN RANGE: 2,000 meters

SPEED: 95 km/hr—land
10 km/hr—water

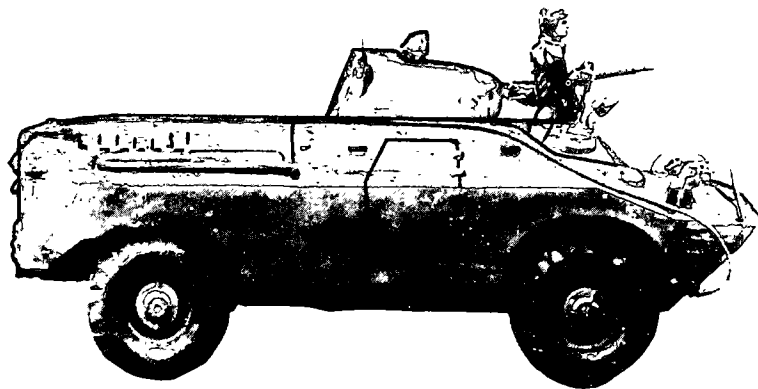
RANGE: 710 km

USERS: Czechoslovakia, Poland

EMPLOYMENT: Motorized rifle units

NOTE: The OT-64C may appear without turret, with Soviet turret, or with Polish turret. The OT-64B may appear with 12.7mm machinegun with surrounding gun shielding.

D-944 ARMORED PERSONNEL CARRIER



RECOGNITION FEATURES: Four-wheeled, amphibious, APC; 14.5mm machine-gun armed turret; no belly wheels; added personnel hatches and firing ports on both sides of vehicle.

ARMAMENT: *1 x 14.5mm machinegun (or 1 x 23mm automatic gun)
1 x 7.62mm machinegun

GUN RANGE: 2,000 meters

SPEED: 80 km/hr — land
9 km/hr — water

RANGE: 700 km

USERS: Czechoslovakia, East Germany, Hungary, Poland

EMPLOYMENT: Motorized rifle units

*Vehicle appears in turretless version, which may be a command vehicle.

BRDM 2 SCOUT CAR



NOTE: The BRDM-series can be penetrated by .50 caliber machinegun fire and HE fragmentation. Tires are vulnerable to puncture from fire of all kinds. SAGGER missile leaves highly visible signature when launched.

RECOGNITION FEATURES: Four-wheeled car with (amphibious) ship-like bow; four retractable belly wheels; box-like hull with cone-shaped turret mounted over the middle retractable wheels (command version has no turret). Has infrared spotlight and driving lights; also NBC protection.

ARMAMENT: 1 x 14.5mm machinegun
1 x 7.62mm machinegun

GUN RANGE: 2,000 meters

SLOPE ASCENDING CAPABILITY: 30 degree/50 percent

SPEED: 100 km/hr—land
10 km/hr—water

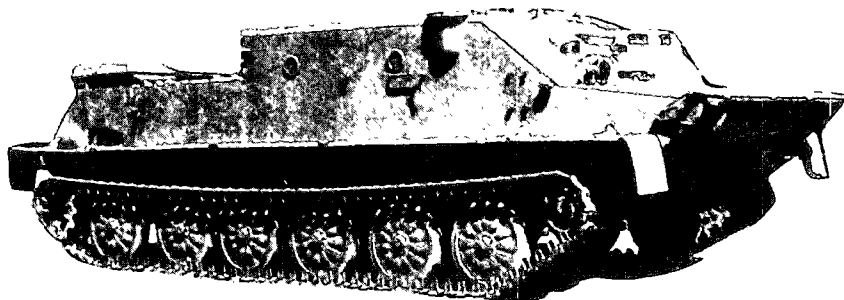
FORDING CAPABILITY: Amphibious

RANGE: 750 km

USERS: Angola, Egypt, Israel, Mali, Middle East, USSR, Warsaw Pact

EMPLOYMENT: Found in reconnaissance battalion of motorized and tank divisions, and in reconnaissance companies of motorized rifle and tank regiments. Used also as ATGM and SA-9 carrier.

BTR-50 PK ARMORED PERSONNEL CARRIER



*Command post versions are identified by additional tower-type cupola on the right or additional antennas. P model is open. PK has armored covers on top.



RECOGNITION FEATURES: Tracked, amphibious APC*; six-roadwheeled; boat-type hull with vertical sides; tower-type cupola on left front; driver's hatch center front; same chassis as PT-76.

ARMAMENT: 1 x 7.62mm machinegun
1 x 12.7mm machinegun

GUN RANGE: 1 x 12.7mm machinegun—2,000 meters

SLOPE ASCENDING CAPABILITY: 30 degree/50 percent

SPEED: 44 km/hr—land
10 km/hr—water

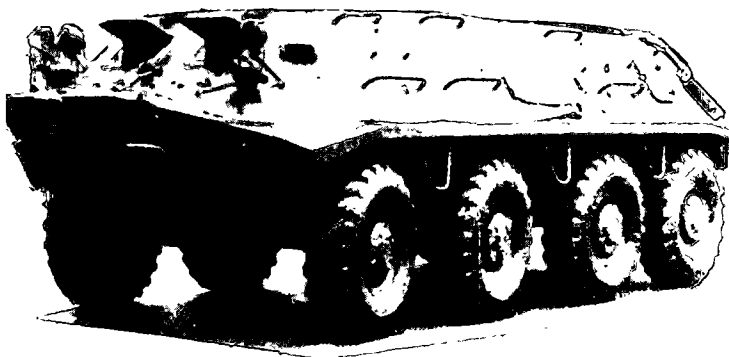
FORDING CAPABILITY: Amphibious

RANGE: 260 km

USERS: Middle East, USSR, Warsaw Pact, Worldwide

EMPLOYMENT: Motorized rifle units with tank formations. Seen in quantity is signature equipment of a tank division.

BTR-60 P/PA* ARMORED PERSONNEL CARRIER



*BTR-60A is BTR-60 with overhead armor covers. BTR-60 PU is command post version, similar to the BTR-60P, but with a canvas cover and additional antennas.

RECOGNITION FEATURES: Eight-wheeled (evenly spaced) APC; opened-top ; amphibious; boat-shaped hull; well-sloped armor; infrared searchlights above co-driver's seat; 4 large wheels per side; duck-billed amphibious prow.

ARMAMENT: 2 x 7.62mm machinegun
1 x 12.7mm machinegun

GUN RANGE: 2,000 meters

SLOPE ASCENDING CAPABILITY: 30 degree/50 percent

SPEED: 80 km/hr — land
10 km/hr — water

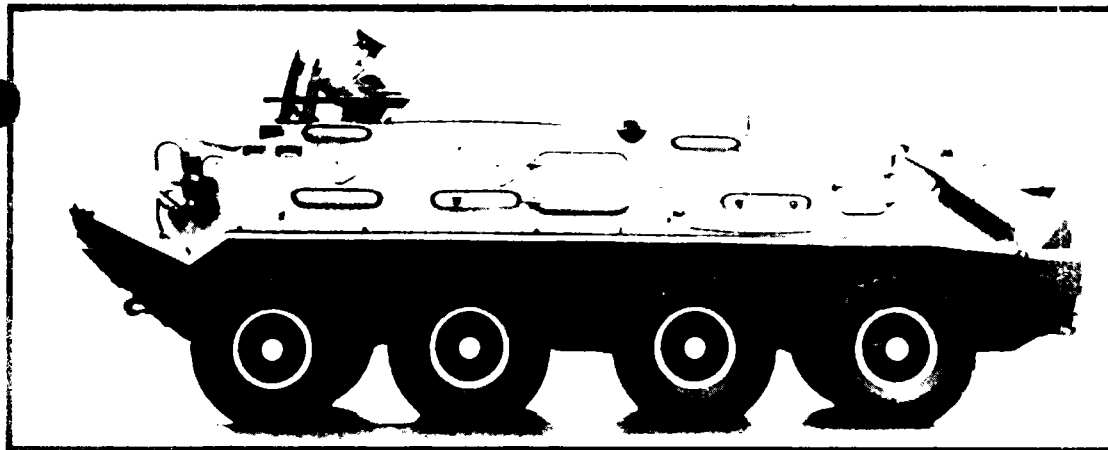
FORDING CAPABILITY: Amphibious

RANGE: 500 km

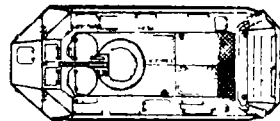
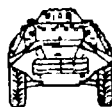
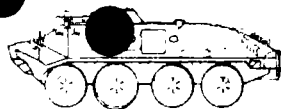
USERS: Cuba, East Germany, Middle East, USSR

EMPLOYMENT: Motorized rifle units

BTR-60 PB ARMORED PERSONNEL CARRIER



NOTE: BTR-60 PB vulnerable to small arms fire and HE fragmentation; tires very vulnerable to puncture.



APC

RECOGNITION FEATURES: Eight-wheeled; amphibious; boat-like hull; well-sloped armor, rear-mounted powerplant; all eight wheels are powered; has infrared night-driving equipment.

ARMAMENT: 1 x 14.5mm heavy machinegun
1 x 7.62mm machinegun

GUN RANGE: 2,000 meters

SLOPE ASCENDING CAPABILITY: 30 degree/50 percent

SPEED: 80 km/hr—land
10 km/hr—water

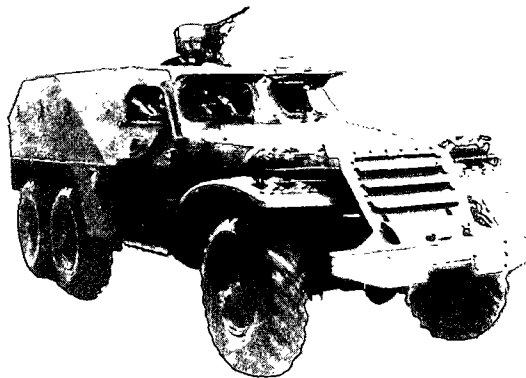
FORDING CAPABILITY: Amphibious

RANGE: 500 km

USERS: Cuba, East Germany, Middle East, USSR, Warsaw Pact

EMPLOYMENT: Troop transport, amphibious operations, standard for Soviet Marine Corps; used by infantry and motorized rifle units. Also appears as a forward air control vehicle, which is similar to the BTR-60 PB. Armament in the turret has been replaced with a large plexiglass window fitted to the front of the turret, and a large portable generator fitted to the rear deck.

BTR-152 ARMORED PERSONNEL CARRIER



RECOGNITION FEATURES: Six-wheeled APC; nonamphibious; long hood with venetian blind type radiator cover; vertical sides and rear wall with cut-in corners.

ARMAMENT: 1 x 7.62mm machinegun
1 x 12.7mm machinegun

GUN RANGE: 2,000 meters

SLOPE ASCENDING CAPABILITY: 30 degree/50 percent

SPEED: 65 km/hr

FORDING CAPABILITY: 2 feet, 7 inches

RANGE: 780 km

USERS: Middle East, Warsaw Pact, (obsolescent)

EMPLOYMENT: Motorized rifle units

BMD AIRBORNE COMBAT VEHICLE



RECOGNITION FEATURES: Five evenly spaced roadwheels; turret mounts the same as on the BMP; rear crew compartment, amphibious.

ARMAMENT: 1 x 73mm main gun
4 x SAGGER missile launcher
1 x 7.62mm machinegun (coaxial)
2 x 7.62mm machinegun (bow)

MAIN GUN RANGE: 1,300 meters

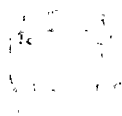
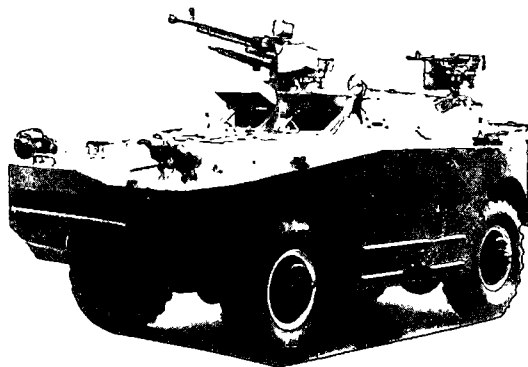
SPEED: 800 km/hr (approximately)

RANGE: 320 km (approximately)

USERS: USSR

EMPLOYMENT: Airborne units

BRDM ARMORED RECONNAISSANCE VEHICLE



RECOGNITION FEATURES: Four-wheeled, amphibious, armored reconnaissance vehicle; has full armored cover; has four small rough terrain belly wheels that may be raised or lowered when needed.

ARMAMENT: 1 x 7.62mm machinegun
1 x 12.7mm machinegun

GUN RANGE: 2,000 meters

SLOPE ASCENDING CAPABILITY: 30 degree/50 percent

SPEED: 80 km/hr—land
9 km/hr—water

FORDING CAPABILITY: Amphibious

RANGE: 500 km

USERS: Middle East, and all Warsaw Pact countries

EMPLOYMENT: As scout car in recon units; as missile carrier can mount SNAPPER, SWATTER, or SAGGER antitank missiles. BRDM-series is vulnerable to .50 caliber machinegun fire.

BMP INFANTRY COMBAT VEHICLE



NOTE: The BMP with its 14mm maximum armor is extremely vulnerable to ATGM and tank fire penetration. Anywhere will be effective.

RECOGNITION FEATURES: Six-roadwheeled, three-track support rollers, amphibious, ICV; engine in front; two doors in rear; four hatches on top of crew compartment; low silhouette with flat revolving turret. (May have SAGGER mounted above gun.) Sharp sloping front with conspicuously ridged surface; commander's hatch mounts infrared searchlight.

ARMAMENT: 1 x 73mm short recoilless gun
1 x 7.62mm machinegun (coaxial)
4 x SAGGER ATGMs

GUN RANGE: 73mm gun—1,000 meters
SAGGER—3,000 meters

SLOPE ASCENDING CAPABILITY: 38 degree/62 percent

SPEED: 60 km/hr—land
8 km/hr—water

FORDING CAPABILITY: Amphibious

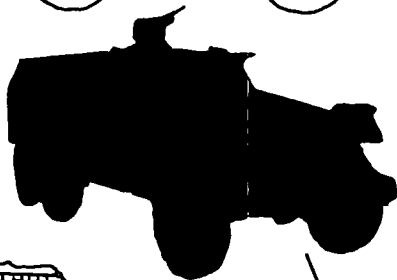
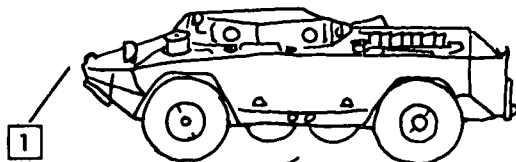
RANGE: 500 km

USERS: Cuba, Czechoslovakia, East Germany, India, Middle East, Poland, USSR

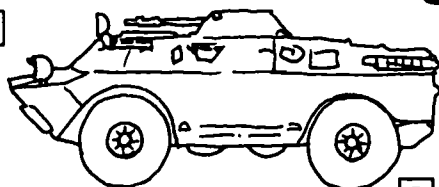
EMPLOYMENT: Motorized rifle units

Can you identify these?

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____



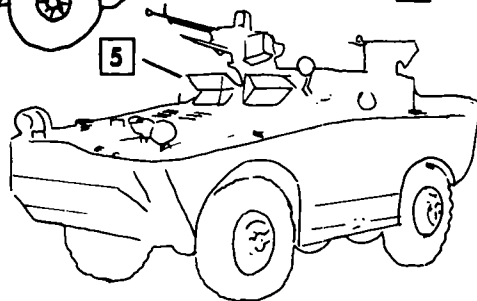
2



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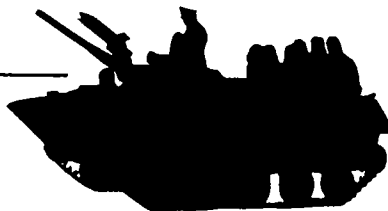


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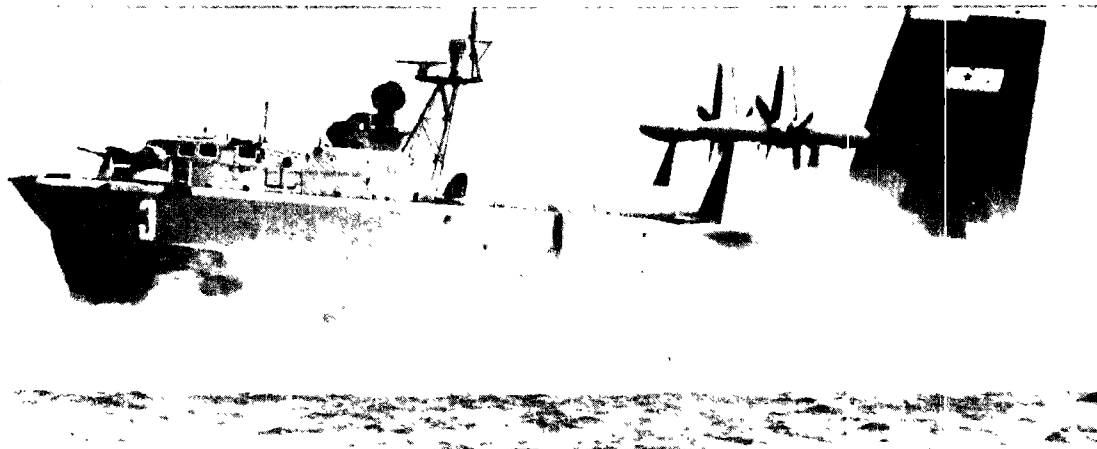
6



MISCELLANEOUS

AIST	308
LEBED	310
GUS	312
BTM	314
MAZ-537	316
PTS PKP	318

AIST CLASS AIR CUSHION VEHICLE (ACV)



RECOGNITION FEATURES: Extremely large ACV; four propellers mounted in front of two large aerodynamic rudders in pairs facing each other closely; communications gear, radar, control cabin in front; twin 30mm automatic weapon system above the control cabin.

ARMAMENT: 1 x 30mm twin mount

GUN RANGE: 2,000 meters

SPEED: 50 to 60 knots

MAIN GUN RANGE: 500 to 600 km (estimated)

USERS: USSR

EMPLOYMENT: Amphibious assault (armor carrier)

LEBED CLASS AIR CUSHION VEHICLE (ACV)



MISCELLANEOUS

RECOGNITION FEATURES: Two sets of housed propellers mounted in front of two large rudders; control area in front.

ARMAMENT: 1 x 30mm twin mount

GUN RANGE: 2,000 meters

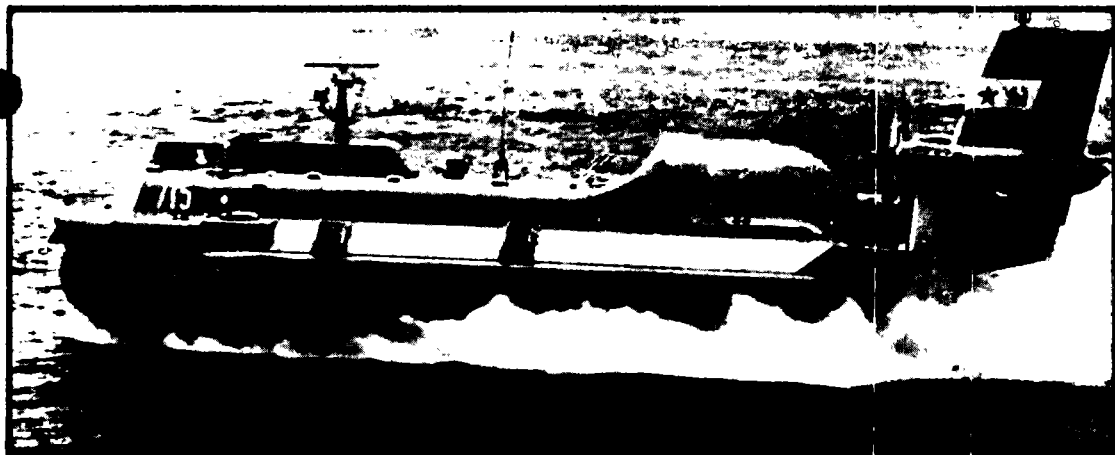
SPEED: 50 to 55 knots

RANGE: 300 to 400 km

USERS: USSR

EMPLOYMENT: Amphibious assault (vehicle carrier); used with amphibious assault ship

GUS CLASS AIR CUSHION VEHICLE (ACV)



RECOGNITION FEATURES: Appears in two versions—one is a troop carrier, the other has slightly longer cargo/passenger cabin and a small cupola above the control cabin.

ARMAMENT: None

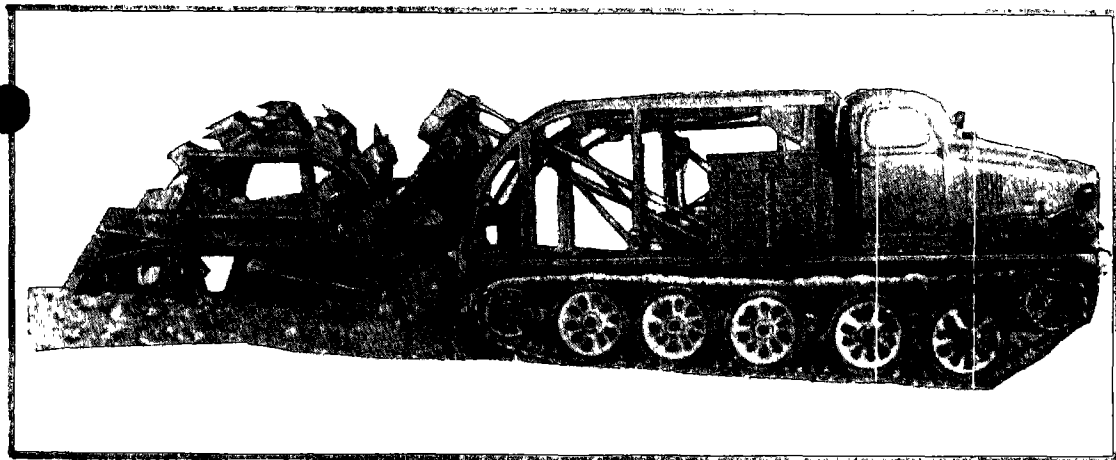
SPEED: 60 knots

RANGE: 300 to 400 km (estimated)

USERS: USSR

EMPLOYMENT: Border patrol, amphibious assault, commando operations, naval infantry

SOVIET DITCHING MACHINE BTM



MISCELLANEOUS

RECOGNITION FEATURES: Variation of the AT-T heavy tracked artillery tractor. Can move 600 to 800 cubic meters of earth per hour when ditching in a straight line; ditching wheel has 10 buckets and is regulated for depth by a cable.

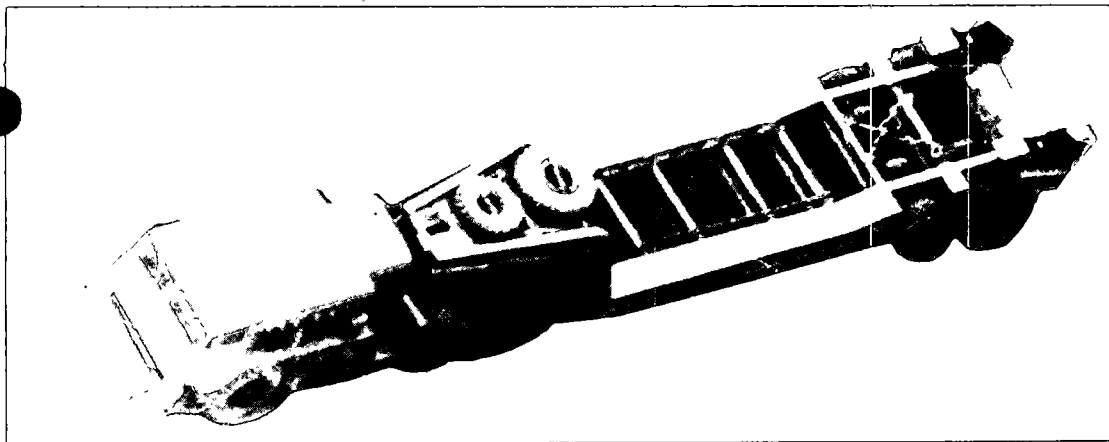
SPEED: 42 km

RANGE: 320 km

USERS: East Germany (GB-409), USSR

EMPLOYMENT: Construct antitank ditches and break up hard surfaces.

MAZ-537



RECOGNITION FEATURES: Extremely long vehicle, box-like cab and engine compartment, open framework of trailer.

ARMAMENT: None

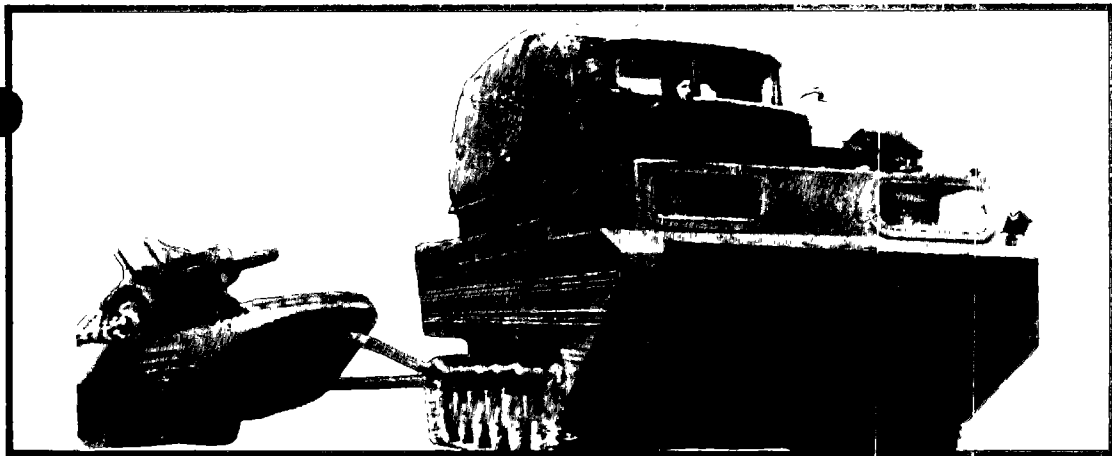
SPEED: 60 km/hr

RANGE: 650 km

USERS: Egypt, Iran, Syria, USSR, Warsaw Pact

EMPLOYMENT: Tractor truck for heavy equipment

Heavy Tracked Amphibian PTS Carrier With PKP Trailer



MISCELLANEOUS

RECOGNITION FEATURES: Has roadwheels of T-54, single-axle PKP trailer; can be used with PTS-M. Trailer can carry antitank guns and field howitzers; two propellers.

SPEED: 40 km/hr—land
15 km/hr—water

RANGE: 400 km

USERS: USSR

EMPLOYMENT: Prime mover for 100mm antitank gun and U/122mm M-38 howitzer.

CONVERSION SCALE

KILOMETERS	10									0	10	20	30	40	50	60	70	80
NAUTICAL MILES	10									0	10	20	30	40				
STATUTE MILES	10									0	10	20	30	40				

KILOMETERS	100									0	1000	2000	3000	4000	5000	6000	7000	8000
NAUTICAL MILES	100									0	1000	2000	3000	4000				
STATUTE MILES	100									0	1000	2000	3000	4000	5000			

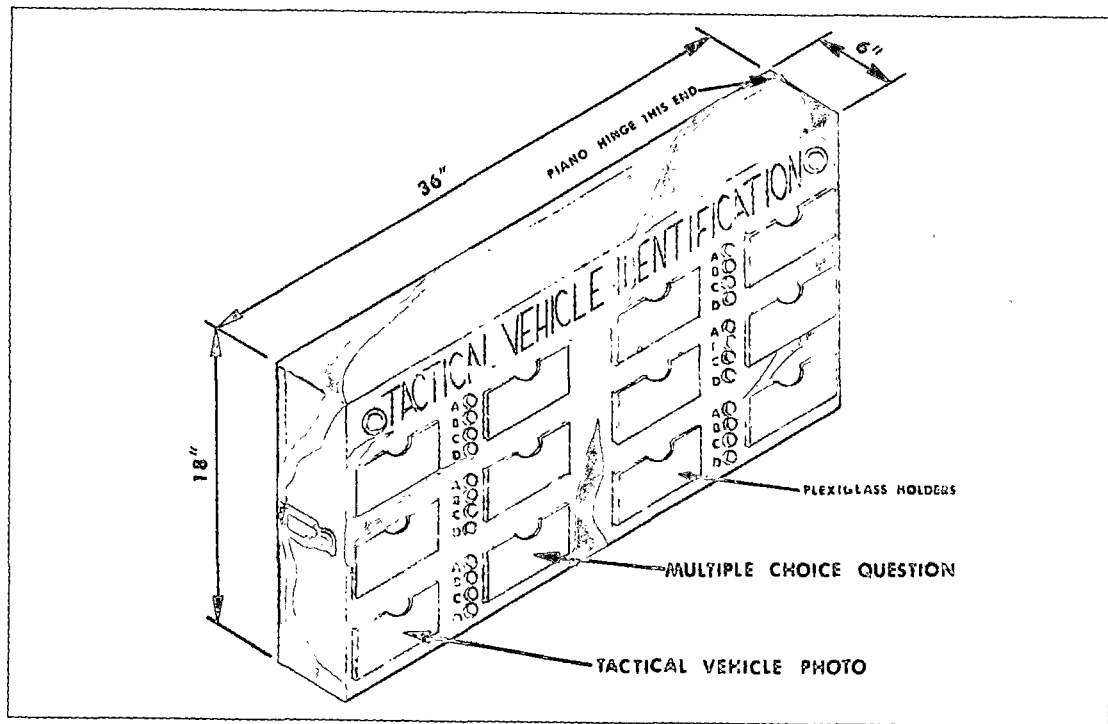
1 sm = .87 nm

1 sm = 1.61 km

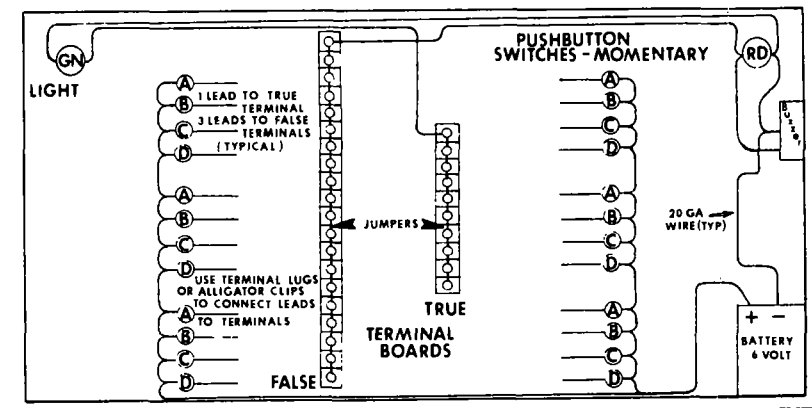
1 nm = 1.85 km

1 nm = 1.15 sm

GAMING DEVICE TACTICAL VEHICLE IDENTIFICATION



WIRING DIAGRAM



BACK VIEW

The illustrated gaming device (Tactical Vehicle Identification) can serve as an instructional tool for increasing knowledge of combat equipment and for proficiency testing. The unit has twelve slots for holding unmarked pictures of tactical vehicles. Each slot has four possible answers marked A, B, C, and D with appropriate buttons. When the right answer button is selected, a green light will flash. The wrong answer button will sound a buzzer and flash a red light. This unit may be used in class instructions; however, it also may be kept in a continually accessible area so that concerned personnel may use it for self-testing.

The wiring diagram and isometric drawing are provided as a guide to aid the local training aids facility to construct the device.

FM 1-88**7 JULY 1980**

By Order of the Secretary of the Army:

E. C. MEYER

*General, United States Army
Chief of Staff*

Official:

J. C. PENNINGTON

*Major General, United States Army
The Adjutant General*

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7 July 1980

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